Proof of Riemann Hypothesis

BOUAZAD EL BACHIR

Abstract

Riemann Hypothesis is a conjecture that states that all non trivial zeros of Riemann function are located on critical strip exactly on 1/2.

This conjecture has been unsolved for over 160 years.

In this proof that contains 294 pages, I will prove the conjecture of Riemann hypothesis using **theorems and formulas that have never discovered before** , I will also prove that there is and other function that is similar to Riemann Zeta Function and all its non trivial zeros lie exactly on critical strip – 1/2

If mathematician like Ramanujan has found the sum of this infinite series : $1+2+3+4+5+6+7+\ldots\ldots = -1/12$, I will prove the value of this infinite product : $(-2)*(-3)*(-5)*(-7)*(-11)*(-13)*(-17)*\ldots\ldots\ldots\ldots = ?$

If the mathematician Euler has prove that $1/1^2 + 1/2^2 + 1/3^2 + 1/4^2 + 1/5^2 + \ldots\ldots = \pi^2/6$

In this proof , I will generalize this formula for any S , hence S is a complex number

$Z(S) + Z(-S) = \pi^2/6$

You will find many other formulas and theorems that justify and prove Riemann hypothesis conjecture

Notice: **the content is at the bottom of this research**

*Introduction and brief story about Riemann zeta function:

The first one who used the zeta function was the famous mathematician EULER. He used the function by using real numbers variables.

After that Riemann came and extended this function of zeta using imaginary numbers variables

$$Z(s) = \sum_{n=1}^{\infty} 1/n^s = \frac{1}{1^s} + \frac{1}{2^s} + \frac{1}{3^s} + \frac{1}{4^s} + \frac{1}{5^s} + \frac{1}{6^s} + \frac{1}{7^s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

Riemann noticed that zeta function is equal to 0 in non trivial zeros

Z(s) =0 $\Longrightarrow$ **S= 1/2 + iy ,Re(S)= 1/2** ,All non trivial zeros has an real numbers that equal to 1/2

This is what we call Riemann hypothesis

All these non trivial zeros has a relationship with the distribution of prime numbers

*Question:

-Guess what will be the result if we multiply 2 by itself until the infinity?

2*2*2*2*2*..................................... =?

-Guess what will be the result of this infinite series?

$(1/7^1 +1/7^2 +1/7^3 +1/7^4 +1/7^5 +\ldots\ldots) +1+ (7^1 +7^2 +7^3 +7^4 +7^5 +\ldots\ldots) =?$

-Guess what will be the result of these infinite series?

8+8+8+8+8+.. =?

S+S+S+S+S+.. =? Hence S is a complex number

-Guess what will be the result of this infinite product?

(-2)*(-3)*(-5)*(-7)*(-11)*(-13)*(-17)*...................... =?

-Do you know that there is another absorbent element that is different to 0 and has the same properties of 0 zero

Hence : S*(New Zero) = New Zero , S is a complex number

-The Basel problem was solved by the famous mathematician Euler by proving that:

$1/1^2 +1/2^2 +1/3^2 +1/4^2 +1/5^2 +1/6^2 +1/7^2 +\ldots\ldots = \Pi^2/6$

But , do you know that this famous Euler formula is just a part of general formula ?

-Can we prove that : 1*1*1*1*1*..................................... = 1

- Mathematicians said that Z(1) is undefined in S=1 , it is a pole , that means singularity. And Z(1) = +∞ is a harmonic series.

*Answer:

-If we multiply 2 by itself until the infinity, we get as a result:

2*2*2*2*2*..................................... = 0

-The result of this infinite series will be :

$(1/7^1 +1/7^2 +1/7^3 +1/7^4 +1/7^5 +\ldots\ldots) +1+ (7^1 +7^2 +7^3 +7^4 +7^5 +\ldots\ldots) = 0$

-The result of these infinite series will be :

8+8+8+8+8+.. = Log(0) = Z(0) = 2 - $\Pi^2/6$ ≈ 0,356733333

S+S+S+S+S+.. ..= Log(0) = Z(0) = 2 - $\Pi^2/6$ ≈ 0,356733333

Hence S is a complex number

-The result of this infinite product will be :

$(-2)*(-3)*(-5)*(-7)*(-11)*(-13)*(-17)*\ldots\ldots\ldots\ldots\ldots\ldots. = - 2\prod^2 -1 = -(2\prod^2 +1)$

-The new absorbent element that is different to 0 and has the same properties of 0 zero is :

$Log(0) = Z(0) = 2 - \prod^2/6 \approx 0{,}356733333$

-The famous Euler formula: $1/1^2 +1/2^2 +1/3^2 +1/4^2 +1/5^2 +1/6^2 +1/7^2 +\ldots\ldots\ldots = \prod^2/6$

Is just a part of general formula that is : $Z(S) + Z(-S) = \prod^2/6$

-Now ,and thanks to new formula , we can prove that : $1*1*1*1*1*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 1$

I am sure that the whole world agrees that:

$Z(1)$ is undefined in $S=1$, it is a pole , that means singularity. And $Z(1) = +\infty$ is a harmonic series

but I am very sure that this result is **WRONG**, because I have proved that:

$Z(1)$ is also defined in $S = 1$, and $Z(1) = \prod^2/6 +1/12$

This proof of Riemann Hypothesis will prove these answers

*New definition of natural numbers:

Natural numbers are divided in 2 groups: even numbers and odd numbers

And if we excluded the number 1 and the number 2 , then we can divide the natural numbers into 4 groups :

Hence the odd numbers will be divided into 2 groups :

-Prime numbers group, and odd numbers that are not primes

Hence the even numbers will divided into 2 groups:

-Pure even numbers group, and even numbers that are not pure

**Prime numbers :

Prime numbers are numbers that accept to be devided by itselves and by 1, and we give them **P** as a symbol

Example: 3,5,7,11,13,17,19,23

** odd numbers but are not prime numbers:

Odd numbers that are not primes are odd numbers that can be divided by itselves and also can be divided by odd numbers and can be divided by prime numbers, and these numbers are product of prime numbers ,we give them

∏P as a symbol

Example:

$(\prod P)_1=3*5*17*149*421$

$(\prod P)_2=11*13*13*29*173*173*173$

$(\prod P)_3=131*(199)^{15} *(312)^2 *439*(180)^{10}$

** even pure numbers :

Even pure numbers are numbers that accept to be devided by itselves and also accept to be devided by an other even pure numbers that is less than them,and they are written like $\mathbf{2^n}$,and we give them **even.p** as a symbol

Example:

$8 = 2^3$, $8/1 = 8$, $8/8 = 1$, $8/2 = 4$, $8/4 = 2$

This means that 8 accept to be devided by itself and to be devided by 1 and by 4 and also by 2

Other examples:

$16 = 2^4$, $32 = 2^5$, $64 = 2^6$

** even numbers but are not pure :

Even numbers that are not pure are even numbers that accept to be devided by itselves, and to be devided by 1, and also accept to be devided by odd number or even number or both of them ,and they accept to be devided by **2** and $\mathbf{2^n}$. we give them **∏P** as a symbol.

These numbers are a general form, they can be written like this :

$$(\prod P)_2 = 2^n.(\pi P)_1$$

$$\prod P = 28 = 4*7 = 2^2 * 7$$

$$\prod P = 1992376 = 2^3 * (37*53*127)$$

1992376 accepts to be devided by itself and by 1 and by 2 , and accept also to be devided by 37 and by 53 and by 127 and by 1961 and by 4699 and by 6731 and by 249047

**Special number : 2

The number 2 is a special number because it is at the same time a even pure number and it is a prime number ,and it is the smallest prime number and the smallest even pure number

** General form of any Natural number:

Any natural number is written like one of these forms:

1) $n = 1$ or $n = 2$ or $n = \text{even.p} = 2^n$
2) $n = P$ or $n = (P)^m$ hence P is a prime number and m is a natural number
3) $n = \prod P$ or $n = (\prod P)^m$ hence $\prod P$ is an even number but not pure and m is a natural number
4) $n = \prod P$ or $n = (\prod P)^m$ hence $\prod P$ is an odd number but not a prime and m is a natural number

*brief story about numbers , especially complex numbers :

The first group of numbers that we have studied in primary school is natural numbers , and then we have studied decimal numbers , and then rational numbers ,after that we have studied integers numbers , and in high school we have studied real numbers and complex numbers

Imagine that we have just Natural numbers . What will be the aim and objective behind inventing other groups of numbers?

** Natural numbers Group: N

Natural numbers are numbers that we have first studied in our primary school or before

0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , …………………………………………

Let us solve this exercise:

We have 4 apples and we have 2 boys

The question is: how many apples can anyone get?

To resolve this problem, we have to resolve this equation :

$$2x = 4$$

Then $x = 4/2$

As a result we get $x = 2$

Consequently, any boy will get 2 apples, so we do not have a problem to represent a result using natural numbers

Let us resolve another problem or exercise:

We have 3 apples and we have 2 boys

The question is: how many apples can anyone get ?

To resolve this problem , we have to resolve this equation :

$$2x = 3$$

Then $x = 3/2$

It is impossible to resolve this problem using natural numbers Group, because there is no natural number that belongs to N and can resolve this equation .That is why mathematical communities and mathematicians brought new group that called D decimal numbers to solve the equation.

** Decimal numbers Group: D

Decimal numbers Group is numbers that can represent new values like half and quarter, this let us talk about 1 apple half apple that can be represented by 1,5 and 3 apples and quarter apple that can be represented by 3,25

Example of these decimal numbers :

45,60 , 2,703 , 2,5 , -2,4 , 303,616 , 7,554

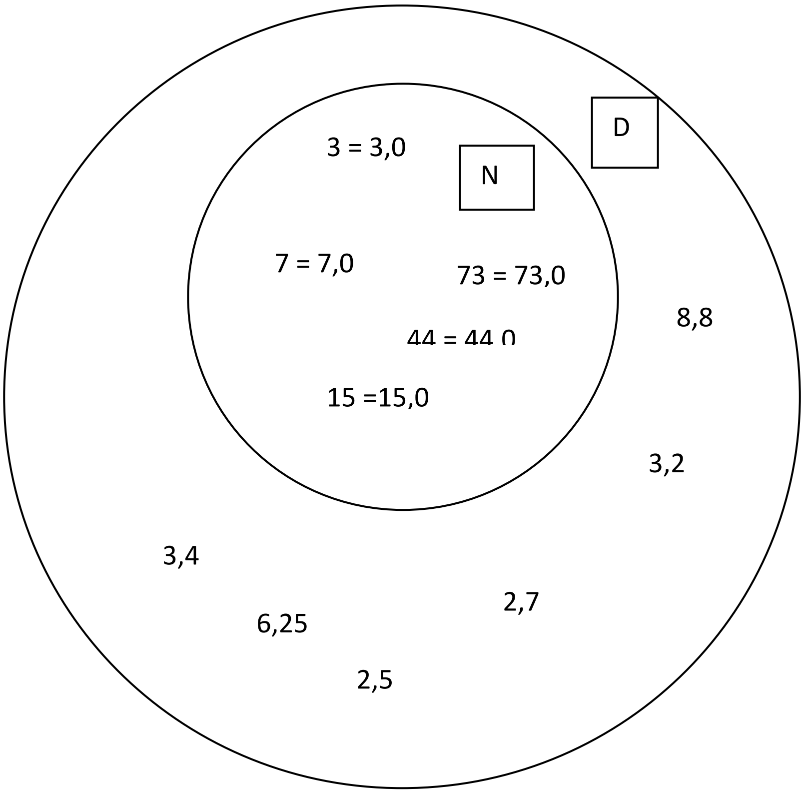
All natural numbers can be written on a form of decimal numbers

Hence 3 = 3,0 435 = 435,0 77 = 77,0

So we can say that $N \subset D$ and we can also say that we have add decimal numbers that are not natural numbers to natural numbers that are in fact decimal numbers .

$3 \in N$ and $3 \in D$

$3{,}4 \notin N$ and $3{,}4 \in D$



So the solution for the previous problem is : x = 3/2

This means that everyone will get 1 apple and half x=1,5

Let us to resolve another problem :

We have 10 apples and we have 3 boys. The question is: how many apples can anyone get ?

To resolve this problem , we have to resolve this equation :

$$3\,x = 10$$

So: $x = 10/3$

Let us divide 10 over 3

10	3
10	3,3333333333……………….
10	
10	
…	
…	

As a conclusion, it is impossible to find the accurate decimal value for this division , we can say that there is no decimal number that can achieve the result . Because we have an infinite division

So that is why mathematical communities and mathematicians have brought new group numbers

** Rational numbers Group: Q

Rational numbers group are numbers that can represent new values such as one- third , we will be enable to represent one-third of apple by 1/3

Example of these rational numbers :

1/3 , 1/7 , 6/7 , 33/25 , 101/30 , -7/9

All natural numbers can be written on a form of rational numbers

Hence 77 = 77/1 , 104 = 104/1 , 22 = 22/1 = 44/2 , 45 = 45/1 = 135/3

And all decimal numbers can be written on a form of rational numbers

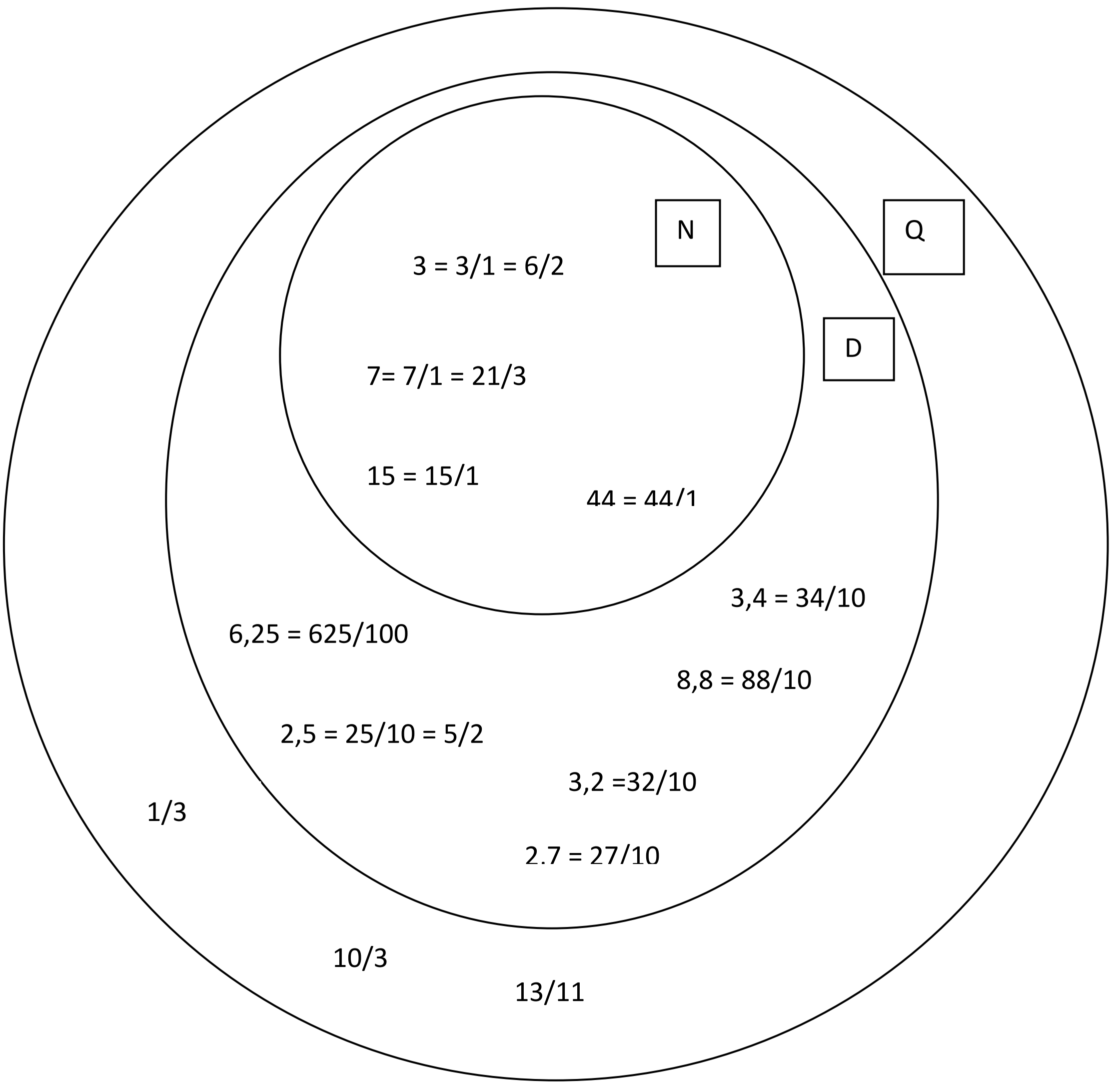
Hence 7,15 =715/100 , 31,12 = 3112/100 , 40,301 = 40301/1000 , 7,5 =75/10 = 15/2

So we can say that $N \subset D \subset Q$ and we can also say that we have add rational numbers that are not decimal numbers to decimal numbers that are in fact rational numbers .

$3 \in N$ and $3 \in D$ and $3 \in Q$

$3{,}4 \notin N$ and $3{,}4 \in D$ and $3{,}4 \in Q$

$10/3 \notin N$ and $10/3 \notin D$ and $10/3 \in Q$



So the solution for the previous problem or exercise is:

X = 10/3

X = 10/3 = 3 + 1/3

As a result everyone will get 3 apples and one- third apple

Let us resolve another problem or another exercise

I went to the market to buy 1 kilo of apple , I got 1 kilo of apple and when I want to pay with my bank card I found that I have just 2 dollars and the kilo of apple costs 3 dollars , so it was impossible to take 1 kilo of apple with me because

$3 > 2$. To avoid this situation and because I am a client of this market ,the stuff gave me a permission to take 1 kilo of apple and to bring 1 dollar for the next time , so I take 1 kilo of apple on credit of 1 dollar

Mathematically this can be expressed in this manner

X = 2 – 3

It is impossible because 3 is greater than 2 , so mathematicians should bring new numbers to solve such problems and add new notions such as credit

** Integers numbers Group: Z

The integers number group are numbers that take negative sign , it can represent negative value such as credit or temperature under 0 or the level of elevator and many other examples

Example:

-1 , -15 , -223

So the solution of the previous problem will be written like this :

X = 2 – 3

X = -1 that represent the credit of 1 dollar

$3 \in N$ and $3 \in D$ and $3 \in Q$ and $3 \notin Z$

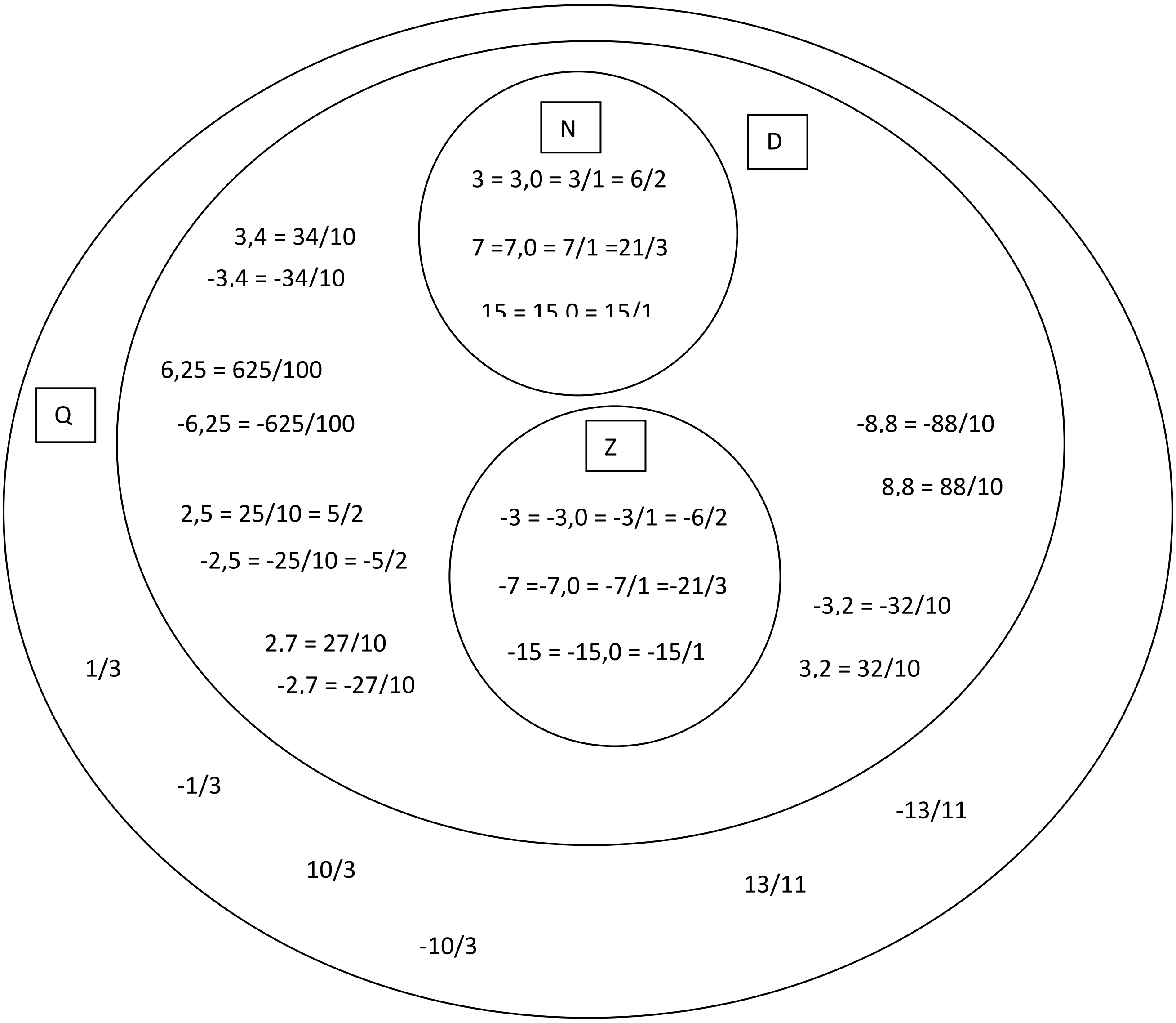
$-3 \in Z$ and $-3 \in D$ and $-3 \in Q$ and $3 \notin N$

$3{,}4 \notin N$ and $3{,}4 \in D$ and $3{,}4 \in Q$

$-3{,}4 \notin Z$ and $-3{,}4 \in D$ and $-3{,}4 \in Q$

$10/3 \notin N$ and $10/3 \notin D$ and $10/3 \in Q$

$-10/3 \notin Z$ and $-10/3 \notin D$ and $-10/3 \in Q$



We are going to talk about a problem by asking many questions about number Groups, and we will answer to these questions

Question 1: what is the number that is multiplied by itself and we get as result 9

To resolve this problem we have to resolve this equation

$X*X = 9$

$X^2 = 9$

$X = 3$ or $X = -3$ because $3*3 = 9$ and $(-3)*(-3) = 9$

Consequently the number that is multiplied by itself and gives 9 as result is 3 or -3

Question 2: What is the number that is multiplied by itself and we get 4,9729 as a result ?

To resolve this problem, we have to resolve this equation:

$$X*X = 4{,}9729$$

Then $X = 2{,}23$ or $X = -2{,}23$

Because $2{,}23 * 2{,}23 = 4{,}9729$ and $(-2{,}23) * (-2{,}23) = 4{,}9729$

Consequently the number that is multiplied by itself and gives 4,9729 as result is 2,23 or -2,23

Question 3: What is the number that is multiplied by itself and we get 100/9 as a result ?

To resolve this problem, we have to resolve this equation:

$$X*X = 100/9$$

Then $X = 10/3$ or $X = -10/3$

Because $10/3 * 10/3 = 100/9$ and $(-10/3) * (-10/3) = 100/9$

Consequently the number that is multiplied by itself and gives 100/9 as result is 10/3 or -10/3

Question 4: What is the number that is multiplied by itself 3 times and we get 27 as a result ?

To resolve this problem, we have to resolve this equation:

$$X*X*X = 27$$

$$X^3 = 27$$

Because 3 * 3 * 3 = 27

Consequently the number that is multiplied by itself 3 times and gives 27 as result is 3

Question 5: What is the number that is multiplied by itself 3 times and we get -46,656 as a result ?

To resolve this problem, we have to resolve this equation:

X*X *X= -46,656

X^3 = -46,656

X = -3,6

Because (-3,6) * (-3,6) * (-3,6) = -46,656

Consequently the number that is multiplied by itself 3 times and gives -46,656 as result is -3,6

Question 6: What is the number that is multiplied by itself 3 times and we get 343/729 as a result ?

To resolve this problem, we have to resolve this equation:

X*X *X= 343/729

X^3 = 343/729

X = 7/9

Because 7/9 * 7/9 * 7/9 = 343/729

Consequently the number that is multiplied by itself 3 times and gives 343/729 as result is 7/9

Question 7: What is the number that is multiplied by itself , and we get 2 as a result ?

To resolve this problem, we have to resolve this equation:

$X*X = 2$ $\quad\quad\quad\quad$ $X^2 = 2$

Depends on groups of numbers that exist (N, Z , D ,Q) there is no number that belongs to these groups of numbers and solves this equation, so mathematicians have brought new group of numbers in order to solve this equation

** Real numbers Group: R

$3\in N$ and $3\in D$ and $3\in Q$ $3\in Q$ and $3\notin Z$

$-3\in Z$ and $-3\in D$ and $-3\in Q$ $-3\in R$ and $3\notin N$

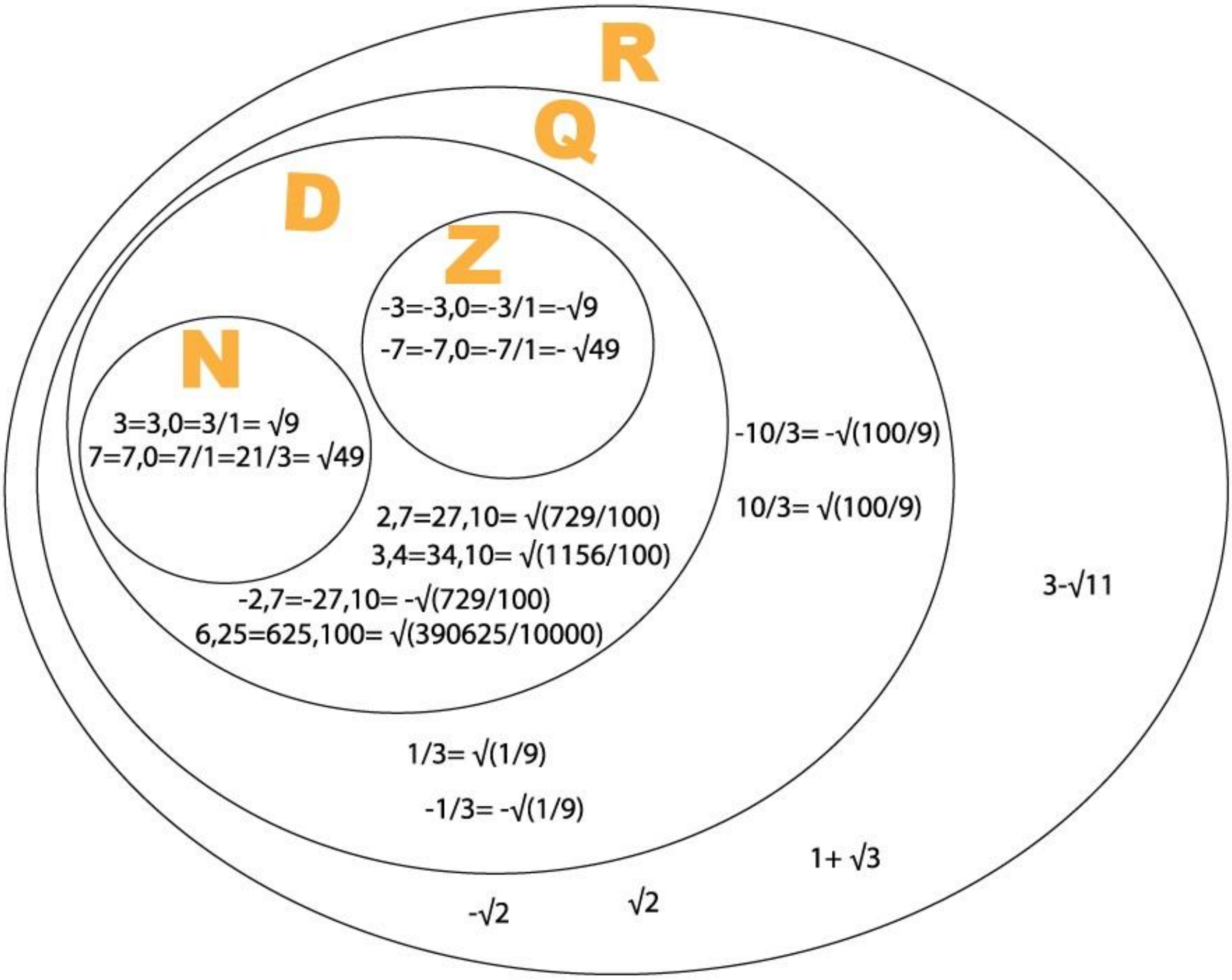
$3,4\notin N$ and $3,4\notin Z$ and $3,4\in D$ and $3,4\in Q$ and $3,4\in R$

$-3,4\notin Z$ and $-3,4\notin N$ $-3,4\in D$ and $-3,4\in Q$ and $-3,4\in R$

$10/3\notin N$ and $10/3\notin Z$ and $10/3\notin D$ and $10/3\in Q$ and $10/3\in R$

$-10/3\notin Z$ and $-10/3\notin N$ and $-10/3\notin D$ and $-10/3\in Q$ and $-10/3\in R$

$\sqrt{2}\notin N$ and $\sqrt{2}\notin Z$ and $\sqrt{2}\notin D$ and $\sqrt{2}\notin Q$ and $\sqrt{2}\in R$



The group of real numbers are numbers that can represent a solution of this kind of equation like $X^2 = 2$ or

$X^3 = 6$

Example of these numbers : $\sqrt{2}$, $-\sqrt{2}$, $-\sqrt[7]{8}$, $1-\sqrt{7}$, $3+2\sqrt{5}$

Hece

all natural numbers can be written on a form of real numbers

Example: $3 = \sqrt{9}$, $10 = \sqrt{100}$, $11 = \sqrt{121}$

And all integers numbers can be written on a form of real numbers

Example: $-3 = -\sqrt{9}$, $-3 = -\sqrt[3]{27}$, $-7 = -\sqrt{49}$

And all decimal numbers can be written on a form of real numbers

Example: $2{,}7 = \sqrt{729/100}$, $-2{,}7 = -\sqrt{729/100}$

And all rational numbers can be written on a form of real numbers

Example: $1/3 = \sqrt{1/9}$, $-1/3 = -\sqrt{1/9}$

So we can say that : $N \subset D \subset Q \subset R$ and $Z \subset D \subset Q \subset R$

As a result we can say that the group of real numbers R contains all groups of numbers plus new numbers that do not belong to previous group of numbers such as : $\sqrt{2}$, $\sqrt{7}$, $-\sqrt[3]{11}$, $-\sqrt{3}$

So the solution of previous problem or exercise is :

$X^2 = 2$

$X = \sqrt{2}$ or $X = -\sqrt{2}$

In high school we have studied that all number under a square root are positive and not negative, and we have studied also that any positive number multiplied by another positive number gives a positive number as a result, and any negative number multiplied by another negative number gives positive number as a result .

$(+) * (+) = (+)$ and $(-) * (-) = (+)$

Let us ask an important question:

The question: What is the number that is multiplied by itself and we get - 2 as a result ?

To resolve this problem, we have to resolve this equation:

$$X*X = -2$$

$$X^2 = -2$$

It is impossible to resolve this equation , because there is no real positive number multiplied by another real positive numbers and gives us negative number, and there is no real negative number multiplied by another real negative numbers and gives us negative number so we need to bring new group of numbers that is big than group of real numbers R that help us to resolve this equation .

** Complex numbers Group: ℂ

So to come up with this new group of number which is a complex numbers that has a symbol ℂ , mathematicians have followed the same strategy that they followed to come up with previous group of numbers which means that all numbers of a previous group are a part of the new group "complex numbers" plus new numbers that do not belong to previous group of numbers " N , Z , D , Q , R "

All the previous numbers of groups N and Z and D and Q and R will be written in new form that is a form of complex number

The general form of a complex number is : $S = a + ib$

Hence a is a real number of a complex number S and b is an imaginary number of a complex number S

Without forgotten that $i^2 = 1$

Example of complex numbers :

$\sqrt{3}$ /3 +1/3 i , 3 + i$\sqrt{2}$, 2 + 2i , - 7 – 8i , - 11 +i$\sqrt{7}$

Natural numbers can be written in a form of complex numbers like this :

7 = 7 + 0i , 111 = 111 + 0i , 730 = 730 + 0i

Integers numbers can be written in a form of complex numbers like this :

-6 = - 6 + 0i , - 30 = - 30 + 0i , - 47 = - 47 + 0i

Decimal numbers can be written in a form of complex numbers like this :

2,37 = 2,37 + 0i , - 6,7 = - 6,7 + 0i

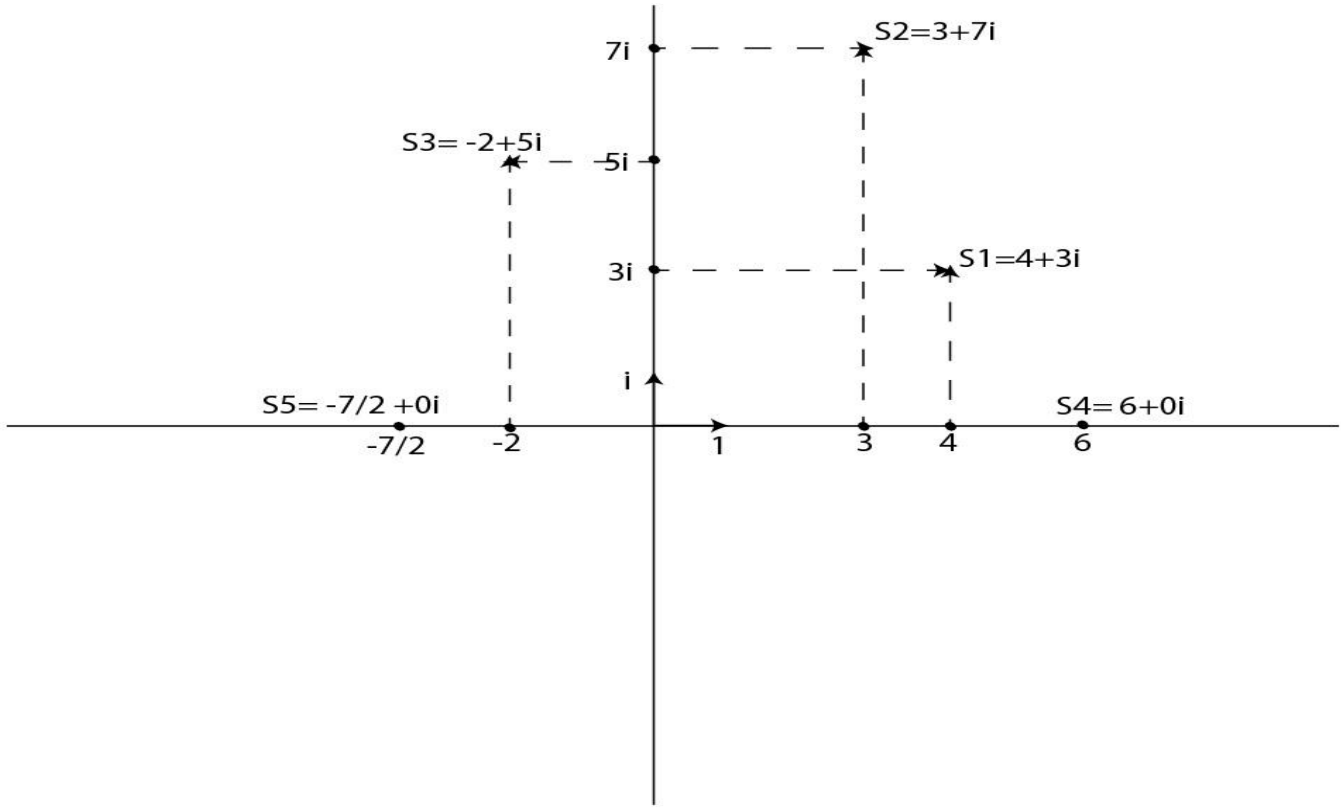
Rational numbers can be written in a form of complex numbers like this :

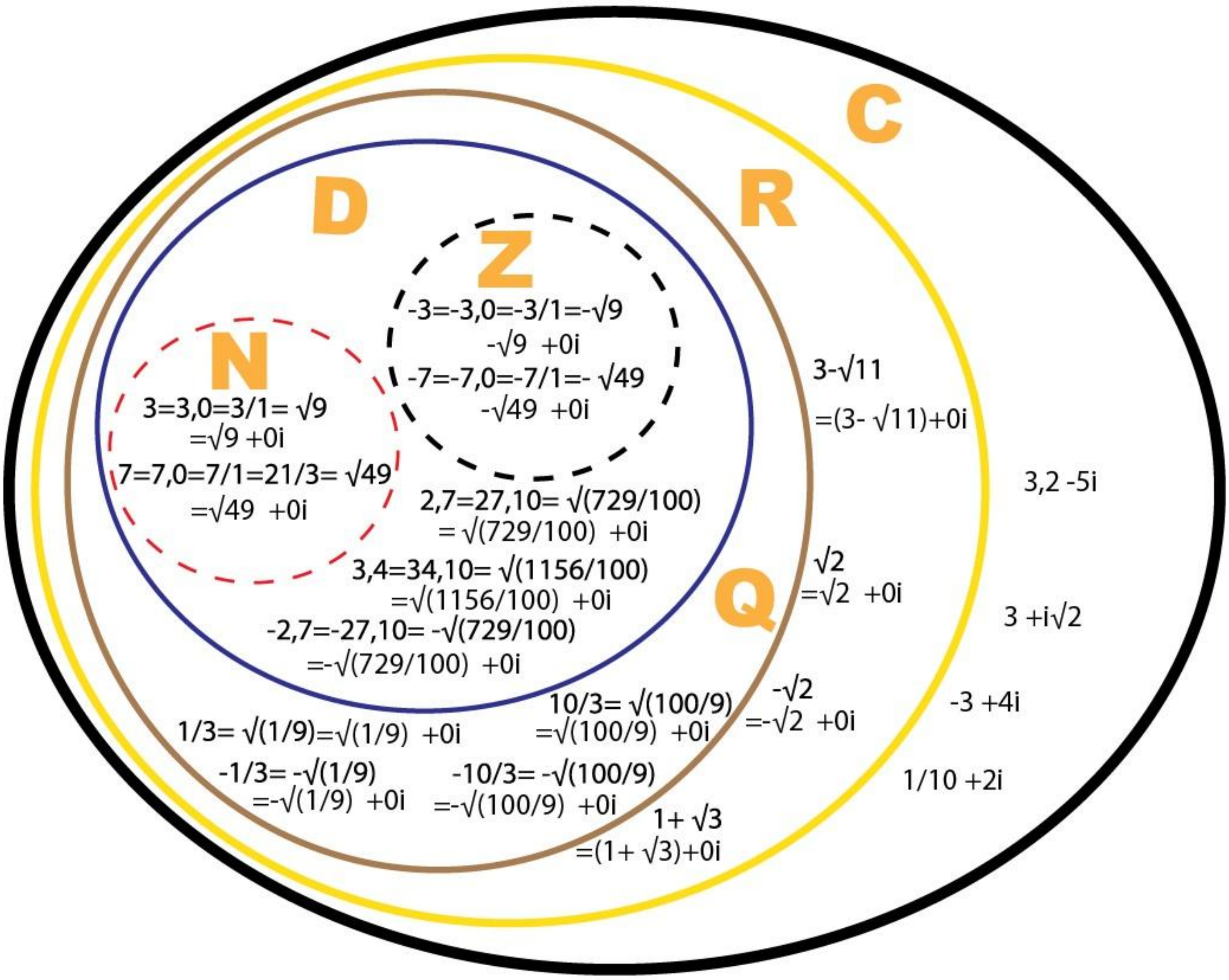
7/3 = 7/3 + 0i , - 3/10 = - 3/10 + 0i , 19/17 = 19/17 + 0i

Real numbers can be written in a form of complex numbers like this :

$\sqrt{7/8}$ = $\sqrt{7/8}$ + 0i , - $\sqrt{3}$ / 2 = - $\sqrt{3}$ / 2 + 0i , $\sqrt{2}$ = $\sqrt{2}$ + 0i

Geometric representation of complex numbers :




C
R
D
Z
N
Q
-3=-3,0=-3/1=-√9
-√9 +0i
-7=-7,0=-7/1=- √49
-√49 +0i
3=3,0=3/1= √9
=√9 +0i
7=7,0=7/1=21/3= √49
=√49 +0i
2,7=27,10= √(729/100)
= √(729/100) +0i
3,4=34,10= √(1156/100)
=√(1156/100) +0i
-2,7=-27,10= -√(729/100)
=-√(729/100) +0i
1/3= √(1/9)=√(1/9) +0i
-1/3= -√(1/9)
=-√(1/9) +0i
10/3= √(100/9)
=√(100/9) +0i
-10/3= -√(100/9)
=-√(100/9) +0i
3-√11
=(3- √11)+0i
√2
=√2 +0i
-√2
=-√2 +0i
1+ √3
=(1+ √3)+0i
3,2 -5i
3 +i√2
-3 +4i
1/10 +2i

GENERAL FORMULAS

1-PART1:GENERAL FORMULAS 1

2-PART2:GENERAL FORMULAS 2

3-PART3:GENERAL FORMULAS 3

PART 1
GENERAL
FORMULAS 1

* Part 1:General formulas 1:

** Formula 1:

We have already talked about the number 2 that is a special number , because is a prime number and at the same time is an even pure number , and we have talked also about even pure numbers that can be written in this manner : 2^n

Example : 2 , 4 , 8 , 16 , 32 , 64 ……..

Let us calculate the sum of this infinite series that contains even pure numbers

2 + 4 + 8 + 16 + 32 + 64 + 128 + 256 + 512 + 1024 + ……………………..

Let us denote this previous infinite serie by $\sum_{n=1}^{\infty} even.p$

Hence $\sum_{n=1}^{\infty} even.p$ = 2 + 4 + 8 + 16 + 32 + 64 + 128 + 256 + 512 + 1024 + ……………………..

We have : $2 = 2^1$ and $4 = 2^2$ and $8 = 2^3$ and $16 = 2^4$ and $32 = 2^5$ and $64 = 2^6$ and $128 = 2^7$ and $256 = 2^8$ and $512 = 2^9$ and $1024 = 2^{10}$

Consequently we get this :

$$\sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10} + \ldots\ldots\ldots\ldots$$

we can also write this sum like that :

$$\sum_{n=1}^{\infty} (2)^n = \sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10} + \ldots\ldots\ldots$$

Now , let us calculate the sum of $\sum_{n=1}^{\infty} even.p$

we have: $\sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10} + \ldots\ldots\ldots\ldots$

*2 we are going to multiply 2 by $\sum_{n=1}^{\infty} even.p$ and we get as a result this :

$$2.\sum_{n=1}^{\infty} even.p = 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10} + \ldots\ldots\ldots\ldots$$

We have: $\sum_{n=1}^{\infty} even.p - 2 = 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10} + \ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty} even.p - 2$ its value and we get as a result this :

1= $\quad 2.\sum_{n=1}^{\infty} even.p = \sum_{n=1}^{\infty} even.p - 2$

1 $\Longleftrightarrow 2.\sum_{n=1}^{\infty} even.p - \sum_{n=1}^{\infty} even.p = -2$

$1 \Longleftrightarrow \sum_{n=1}^{\infty} even.p$ = - 2 and we call this formula: **FORMULA 1**

** Theorem and notion 1 of Zero :

We have : $\sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10} + \ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this sum by 2 until the infinity?

we multiply 2 by $\sum_{n=1}^{\infty} even.p$ and we get as a result this :

$$2.\sum_{n=1}^{\infty} even.p = 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + \ldots\ldots\ldots\ldots$$

Then $$2.\sum_{n=1}^{\infty} even.p = \sum_{n=1}^{\infty} even.p - 2^1$$

We are going to multiply again the result by 2 and we get this :

$$\boxed{2 =} \quad 2.(2.\sum_{n=1}^{\infty} even.p = 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow 2.2.\sum_{n=1}^{\infty} even.p = 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 2.2.\sum_{n=1}^{\infty} even.p = \sum_{n=1}^{\infty} even.p - 2^1 - 2^2$

we continue repeating multiplying the result by 2 and we get this :

$$2 \Longleftrightarrow 2.(2.2.\sum_{n=1}^{\infty} even.p = 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow 2.2.2.\sum_{n=1}^{\infty} even.p = 2^4 + 2^5 + 2^6 + 2^7 + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 2.2.2.\sum_{n=1}^{\infty} even.p = \sum_{n=1}^{\infty} even.p - 2^1 - 2^2 - 2^3$

As a result $2 \Longleftrightarrow 2.2.2.\sum_{n=1}^{\infty} even.p = \sum_{n=1}^{\infty} even.p - (2^1 + 2^2 + 2^3)$

We continue to repeat multiplying the result by 2 until the infinity and we get

$2 \Longleftrightarrow 2.2.2.\sum_{n=1}^{\infty} even.p = 2^4 + 2^5 + 2^6 + 2^7 + ...$

*2 (repeating the multiplication by 2 until infinity)

$2*2*2*.....\sum_{n=1}^{\infty} even.p = \sum_{n=1}^{\infty} even.p - (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)$

we have $\sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...$

we replace the right side of the result by $\sum_{n=1}^{\infty} even.p$ and we get this :

$$2 \Longleftrightarrow 2*2*2*.....\sum_{n=1}^{\infty} even.p = \sum_{n=1}^{\infty} even.p - \sum_{n=1}^{\infty} even.p$$

As a result we get :

$$2 \Longleftrightarrow 2*2*2*.....\sum_{n=1}^{\infty} even.p = 0$$

we have as a previous result : $\sum_{n=1}^{\infty} even.p = -2$

then : $2 \Rightarrow \boxed{2*2*2*2*........ = 0}$

this is theorem and notion 1 of zero

therefore $2^{(1+1+1+1+1+.........)} = 0$

depending on Riemman Zeta function , we have:

$Z(0) = 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + ...$

Then $2^{Z(0)} = 0$

As a conclusion

$\text{Log}\,(2^{Z(0)}) = \text{Log}\,(0)$

Then $\boxed{Z(0) = \text{Log}(0) = 1 + 1 + 1 + 1 + 1 + 1 + 1 + ...}$

this is theorem and notion 1 of zero

From these results we conclude that if we multiply the number 2 by itself and we repeat the multiplication until the infinity , we will get 0 as a result .

And as we know that a real logarithmic function log (x) defined only for $X > 0$, but now, and thanks to **theorem and notion 1 of zero** , log (x) it is defined also for $X \geq 0$ this notion is **THEOREM and NOTION 1 of ZERO**

We are going to talk deeply about this new notion

**Formula 2:

We have :

$\sum_{n=1}^{\infty} even.p$ = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10} +.........

<u>Question: what will be the result if we repeat multiplying this sum by 1/2 until the infinity?</u>

we multiply 1/2 by $\sum_{n=1}^{\infty} even.p$ and we get as a result this :

1/2.$\sum_{n=1}^{\infty} even.p$ = 1 + (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

Then 1/2.$\sum_{n=1}^{\infty} even.p$ - 1 = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...

We are going to multiply again the result by 1/2 and we get this :

$\boxed{2 =}$ 1/2.(1/2.$\sum_{n=1}^{\infty} even.p$ - 1 = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

2$\Longleftrightarrow$ 1/2 *1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^1 = 1 + (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

2$\Longleftrightarrow$ 1/2 *1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^1 - 1 = (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

We repeat multiplying again the result by 1/2 and we get this :

2$\Longleftrightarrow$1/2* (1/2 *1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^1 - 1 = (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

2$\Longleftrightarrow$ 1/2*1/2*1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^2 - 1/2^1 = 1 + (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

2$\Longleftrightarrow$ 1/2*1/2*1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^2 - 1/2^1 - 1 = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...

We repeat multiplying again the result by 1/2 and we get this :

2$\Longleftrightarrow$ 1/2*(1/2*1/2*1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^2 - 1/2^1 - 1 = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

2$\Longleftrightarrow$1/2*1/2*1/2*1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^3 - 1/2^2 – 1/2^1 = 1 + (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)

2$\Longleftrightarrow$1/2*1/2*1/2*1/2$\sum_{n=1}^{\infty} even.p$ - 1/2^3 - 1/2^2 – 1/2^1 - 1 = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...

We repeat multiplying again the result by 1/2 and we get this :

$2 \Longleftrightarrow 1/2*(1/2*1/2*1/2*1/2\sum_{n=1}^{\infty} even.p$ - $1/2^3$ - $1/2^2$ – $1/2^1$ - 1 = $2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)$

$2 \Longleftrightarrow 1/2*1/2*1/2*1/2*1/2\sum_{n=1}^{\infty} even.p$ - $1/2^4$ - $1/2^3$ – $1/2^2$ – $1/2^1$ = 1 +($2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)$

$2 \Longleftrightarrow 1/2*1/2*1/2*1/2*1/2\sum_{n=1}^{\infty} even.p$ - ($1/2^4 + 1/2^3 + 1/2^2 + 1/2^1$) = 1 +($2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)$

$2 \Longleftrightarrow 1/2*1/2*1/2*1/2*1/2\sum_{n=1}^{\infty} even.p$ - ($1/2^1 + 1/2^2 + 1/2^3 + 1/2^4$) = 1 +($2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + ...)$

We continue to repeat multiplying the result by 1/2 until the infinity and we get :

$2 \Longleftrightarrow 1/2*1/2*1/2*...*\sum_{n=1}^{\infty} even.p$ - ($1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 +...$)=1+($2^1+2^2+2^3+2^4+2^5+2^6+2^7 + ...$)

We have :

$1/2 *1/2*1/2*.........\sum_{n=1}^{\infty} even.p = 0$ we are going to give a proof for this later on

Then the equation 2 will be :

$2 \Longleftrightarrow -(1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +.....)$ =1 +($2^1+2^2+2^3+2^4+2^5+2^6+2^7 + ...)$

$2 \Longleftrightarrow -1 - (1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +.....) = 2^1+2^2+2^3+2^4+2^5+2^6+2^7 +......$

$(2^1+2^2+2^3+2^4+2^5+2^6+2^7 + ...) + 1 + (1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +.....) = 0$

we have : $2^1 = 1/2^{(-1)}$ and $2^2 = 1/2^{(-2)}$ and $2^3 = 1/2^{(-3)}$ and $2^4 = 1/2^{(-4)}$ and $2^5 = 1/2^{(-5)}$

then $2^1+2^2+2^3+2^4+2^5+2^6+2^7 +......= 1/2^{(-1)} + 1/2^{(-2)} + 1/2^{(-3)} + 1/2^{(-4)} + 1/2^{(-5)} + 1/2^{(-6)} + 1/2^{(-7)} +.....)$

so we replace this value on the previous equation and we get :

$(1/2^{(-1)} + 1/2^{(-2)} + 1/2^{(-3)} + 1/2^{(-4)} + 1/2^{(-5)} + 1/2^{(-6)} + 1/2^{(-7)} +.....) + 1 + (1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +.....) = 0$

We have $1 = 1/2^0$

let us denote this infinite series $1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +.....$ by $\sum_{n=1}^{+\infty} 1/2^n$

Hence $\sum_{n=1}^{+\infty} 1/2^n = 1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +.....$

let us denote this infinite series $1/2^{(-1)} + 1/2^{(-2)} + 1/2^{(-3)} + 1/2^{(-4)} + 1/2^{(-5)} + 1/2^{(-6)} + 1/2^{(-7)} +...$by $\sum_{n=-1}^{-\infty} 1/2^n$

Hence $\sum_{n=-1}^{-\infty} 1/2^n = 1/2^{(-1)} + 1/2^{(-2)} + 1/2^{(-3)} + 1/2^{(-4)} + 1/2^{(-5)} + 1/2^{(-6)} + 1/2^{(-7)} +.......$

Then the equation 2 will be :

$$2 \iff \sum_{n=-1}^{-\infty} 1/2^n + 1/2^0 + \sum_{n=1}^{+\infty} 1/2^n = 0$$

$$2 \iff \sum_{n \in Z} 1/2^n = 0$$

** The theorem and notion 2 of Zero ,and from classical mathematics to new and modern mathematics and relativity :

One of the postulate in mathematics is the addition of many positive numbers that states the following: if we add many positive numbers , the result will absolutely be positive ,and all mathematicians agree with this statement , but now and thanks to **theorem and notion 2 of zero and formula 2** ,this postulate has broken down and everything will be change .

Hence the sum of infinite positive numbers is equal to Zero

Formula 2 is equal to :

$$\sum_{n=-1}^{-\infty} 1/2^n + 1/2^0 + \sum_{n=1}^{+\infty} 1/2^n = 0$$

$$\sum_{n \in Z} 1/2^n = 0$$

** Formula 3:

The even pure numbers are written on a form of 2^n ,we have already calculate the sum of infinite series that contains even pure number and we get - 2 as a result

<u>Question: what is the reciprocal of even pure number?</u>

The reciprocal of 2 is 1/2 , and the reciprocal of 4 is 1/4 , and the reciprocal of 8 is 1/8 and so on

<u>Question: what can be the result if we calculate the sum of all reciprocal of even pure number?</u>

Let us calculate the sum of this infinite series that contains the reciprocal of even pure numbers

1/2 + 1/4 + 1/8 +1/ 16 + 1/32 + 1/64 + 1/128 + 1/256 + 1/512 +1/ 1024 + ……………………..

Let us denote this previous infinite serie by $\sum_{n=1}^{\infty} \overline{even.p}$

Hence $\sum_{n=1}^{\infty} \overline{even.p}$ = 1/2 +1/ 4 + 1/8 +1/ 16 + 1/32 +1/64 + 1/128 + 1/256 + 1/512 + 1/1024 + ………………

We have : $1/2 = 1/2^1$ and $1/4 = 1/2^2$ and $1/8 = 1/2^3$ and $1/16 = 1/2^4$ and $1/32 = 1/2^5$ and

$1/64 = 1/2^6$ and $1/128 = 1/2^7$ and $1/256 = 1/2^8$ and $1/512 = 1/2^9$ and $1/1024 = 1/2^{10}$

Consequently we get this :

$\sum_{n=1}^{\infty} \overline{even.p} = 1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + 1/2^8 + 1/2^9 + 1/2^{10} + \ldots\ldots\ldots\ldots$

Now , let us calculate the sum of $\sum_{n=1}^{\infty} \overline{even.p}$

we have: $\sum_{n=1}^{\infty} \overline{even.p} = 1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots\ldots\ldots$

*1/2 we are going to multiply 1/2 by $\sum_{n=1}^{\infty} \overline{even.p}$ and we get as a result this :

$1/2.\sum_{n=1}^{\infty} \overline{even.p} = 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots\ldots\ldots$

We have: $\sum_{n=1}^{\infty} \overline{even.p} - 1/2 = 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots$

Let us replace $(1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots)$ with its value and we get as a result this :

$1/2.\sum_{n=1}^{\infty} \overline{even.p} = \sum_{n=1}^{\infty} \overline{even.p} - 1/2$

$1 = \quad 1/2.\sum_{n=1}^{\infty} \overline{even.p} - \sum_{n=1}^{\infty} \overline{even.p} = - 1/2$

$1 \Longleftrightarrow (1/2 - 1) .\sum_{n=1}^{\infty} \overline{even.p} = - 1/2$

$1 \Longleftrightarrow (1/2 - 1) .\sum_{n=1}^{\infty} \overline{even.p} = - 1/2$

$1 \Longleftrightarrow 1/2 .\sum_{n=1}^{\infty} \overline{even.p} = -1/2$

$$\boxed{1 \Longleftrightarrow \sum_{n=1}^{\infty} \overline{even.p} = 1}$$

This formula is called **FORMULA 3**

Question: what will be the result if we repeat multiplying this infinite serie by 1/2 until the infinity?

we multiplied 1/2 by $\sum_{n=1}^{\infty} \overline{even.p}$ and we got as a result this :

$1/2.\sum_{n=1}^{\infty} \overline{even.p} = 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots\ldots\ldots$

$1/2.\sum_{n=1}^{\infty} \overline{even.p} = \sum_{n=1}^{\infty} \overline{even.p} - 1/2^1$

We are going to multiply again the result by 1/2 and we get this :

$1/2*(1/2.\sum_{n=1}^{\infty} \overline{even.p} = 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots\ldots\ldots)$

$1/2*1/2.\sum_{n=1}^{\infty} \overline{even.p} = 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots\ldots\ldots$

$1/2*1/2.\sum_{n=1}^{\infty} \overline{even.p} = \sum_{n=1}^{\infty} \overline{even.p} - 1/2^1 -1/2^2$

we repeat multiplying 1/2 by $\sum_{n=1}^{\infty} \overline{even.p}$ and we get as a result this :

$1/2*(1/2*1/2.\sum_{n=1}^{\infty} \overline{even.p} = 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots\ldots\ldots)$

$1/2*1/2*1/2.\sum_{n=1}^{\infty} \overline{even.p} = 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \ldots\ldots\ldots\ldots$

$1/2*1/2*1/2.\sum_{n=1}^{\infty} \overline{even.p} = \sum_{n=1}^{\infty} \overline{even.p} - 1/2^1 -1/2^2 -1/2^3$

We continue to repeat multiplying the result by 1/2 until the infinity and we get :

$1/2*1/2*1/2*\ldots\ldots\sum_{n=1}^{\infty} \overline{even.p} = \sum_{n=1}^{\infty} \overline{even.p} - (1/2^1 +1/2^2 +1/2^3 +1/2^4 +1/2^5 +1/2^6 +1/2^7 +\ldots\ldots.)$

we have

$\sum_{n=1}^{\infty} \overline{even.p} = 1/2^1 +1/2^2 +1/2^3 +1/2^4 +1/2^5 +1/2^6 +1/2^7 +\ldots\ldots.$

Let us replacing $= 1/2^1 +1/2^2 +1/2^3 +1/2^4 +1/2^5 +1/2^6 +1/2^7 +\ldots\ldots.$ with its value which is $\sum_{n=1}^{\infty} \overline{even.p}$

We get this as a result :

1/2*1/2*1/2*.....$\sum_{n=1}^{\infty} \overline{even.p}$ = $\sum_{n=1}^{\infty} \overline{even.p}$ $-\sum_{n=1}^{\infty} \overline{even.p}$

1/2*1/2*1/2*.....$\sum_{n=1}^{\infty} \overline{even.p}$ = 0

We have $\sum_{n=1}^{\infty} \overline{even.p}$ = 1 so the equation will be

1/2*1/2*1/2*........... = 0

so depending on **Theorem and notion 1 of zero** , if we multiply 1/2 by itself and we repeat the operation until the infinity , we get 0 as a result

$(1/2)^{1+1+1+1+1+1+1+\ldots\ldots\ldots}$ = 0

** Formula 4:

We have :

$\sum_{n=1}^{\infty} \overline{even.p}$ = $1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$...........

<u>Question: what will be the result if we repeat multiplying this infinite serie by 2 until the infinity?</u>

We have :

$\sum_{n=1}^{\infty} \overline{even.p}$ = $1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$...........

we multiplied 2 by $\sum_{n=1}^{\infty} \overline{even.p}$ and we got as a result this :

$2*\sum_{n=1}^{\infty} \overline{even.p}$ = 1+ ($1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$...........)

$2*\sum_{n=1}^{\infty} \overline{even.p} - 1$ = $1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$...........

we repeat multiplying the result by 2 and we get this :

2*($2*\sum_{n=1}^{\infty} \overline{even.p} - 1$ = $1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$...........)

$2*2*\sum_{n=1}^{\infty} \overline{even.p} - 2^1$ = 1+ ($1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$......)

$2*2*\sum_{n=1}^{\infty} \overline{even.p} - 2^1 - 1$= ($1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$......)

We continue to repeat multiplying the result by 2 and we get :

2*($2*2*\sum_{n=1}^{\infty} \overline{even.p} - 2^1 - 1$= ($1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 +$......)

$2*2*2*\sum_{n=1}^{\infty}\overline{even.p} - 2^2 - 2^1 = 1+(1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \dots)$

$2*2*2*\sum_{n=1}^{\infty}\overline{even.p} - (2^1+2^2) = 1+(1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + \dots)$

We continue to repeat multiplying the result by 2 until the infinity and we get :

$2*2*2*\dots\sum_{n=1}^{\infty}\overline{even.p} - (2^1+2^2+2^3+2^4+2^5+2^6+2^7+\dots) = 1+(1/2^1+1/2^2+1/2^3+1/2^4+1/2^5+1/2^6+1/2^7+\dots)$

We have : $2*2*2*\dots\dots\sum_{n=1}^{\infty}\overline{even.p} = 0$

Then the equation will be :

$-(2^1+2^2+2^3+2^4+2^5+2^6+2^7+\dots) = 1+(1/2^1+1/2^2+1/2^3+1/2^4+1/2^5+1/2^6+1/2^7+\dots)$

$(1/2^1+1/2^2+1/2^3+1/2^4+1/2^5+1/2^6+1/2^7+\dots) + 1 + (2^1+2^2+2^3+2^4+2^5+2^6+2^7+\dots) = 0$

$(1/2^1+1/2^2+1/2^3+1/2^4+1/2^5+1/2^6+1/2^7+\dots) + 2^0 + (2^1+2^2+2^3+2^4+2^5+2^6+2^7+\dots) = 0$

let us denote this infinite series $2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + \dots$ by $\sum_{n=1}^{+\infty} 2^n$

Hence $\sum_{n=1}^{+\infty} 2^n = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + \dots$

let us denote this infinite series $2^{(-1)} + 2^{(-2)} + 2^{(-3)} + 2^{(-4)} + 2^{(-5)} + 2^{(-6)} + 2^{(-7)} + \dots$ by $\sum_{n=-1}^{-\infty} 2^n$

Hence $\sum_{n=-1}^{-\infty} 2^n = 2^{(-1)} + 2^{(-2)} + 2^{(-3)} + 2^{(-4)} + 2^{(-5)} + 2^{(-6)} + 2^{(-7)} + \dots$

Then the equation will be :

$$\sum_{n=-1}^{-\infty} 2^n + 2^0 + \sum_{n=1}^{+\infty} 2^n = 0$$

$$\sum_{n\in Z} 2^n = 0$$

** The equality between Formula 2 and Formula 4:

We have Formula 2 is equal to : $\sum_{n=-1}^{-\infty} 1/2^n + 1/2^0 + \sum_{n=1}^{+\infty} 1/2^n = 0$

And Formula 4 is equal to : $\sum_{n=-1}^{-\infty} 2^n + 2^0 + \sum_{n=1}^{+\infty} 2^n = 0$

Then $\sum_{n=-1}^{-\infty} 1/2^n + 1/2^0 + \sum_{n=1}^{+\infty} 1/2^n = \sum_{n=-1}^{-\infty} 2^n + 2^0 + \sum_{n=1}^{+\infty} 2^n = 0$

As a result $\sum_{n\in Z} 1/2^n = \sum_{n\in Z} 2^n = 0$

** Formula 5:

Any even pure number is written like : 2^n

So for any even pure number, let us put the number S as a power ,hence S is a complex number

We have 2 is a even pure number , if we put S as a power we get $\mathbf{2^s}$

We have 4 is a even pure number , if we put S as a power we get $\mathbf{4^s}$

We have 8 is a even pure number , if we put S as a power we get $\mathbf{8^s}$

We have 16 is a even pure number , if we put S as a power we get $\mathbf{16^s}$

Now let us calculate the sum of this infinite series

$2^s + 4^s + 8^s + 16^s + 32^s + 64^s + 128^s + 256^s + 512^s + 1024^s + \ldots\ldots\ldots\ldots\ldots\ldots$

We have $2^s = 2^s$ and $4^s = 2^{2s}$ and $8^s = 2^{3s}$ and $16^s = 2^{4s}$ and $32^s = 2^{5s}$ and $64^s = 2^{6s}$ and $128^s = 2^{7s}$

And $512^s = 2^{8s}$ and $1024^s = 2^{9s}$

So we get as infinite series :

$\mathbf{2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + 2^{8s} + 2^{9s} + 2^{10s} + \ldots\ldots\ldots\ldots\ldots\ldots}$

Let us denote $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p$ the sum of this previous infinite series

Then we get : $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + 2^{8s} + 2^{9s} + 2^{10s} + \ldots\ldots\ldots\ldots\ldots\ldots$

Now , let us calculate the sum of $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p$

we have: $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + 2^{8s} + 2^{9s} + 2^{10s} + \ldots\ldots\ldots$

$*\mathbf{2^s}$ we are going to multiply 2 by $\sum_{n=1}^{\infty} even.p$ and we get as a result this :

$2^s . \sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + 2^{8s} + 2^{9s} + 2^{10s} + \ldots\ldots\ldots$

We have: $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 2^s = 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + 2^{8s} + 2^{9s} + 2^{10s} + \ldots\ldots\ldots$

Let us replace $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 2^s$ its value and we get as a result this :

1= $\quad 2^s . \sum_{\substack{n=s \\ s/s}}^{\infty} even.p = \sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 2^s$

$1 \Longleftrightarrow 2^s . \sum_{\substack{n=s \\ s/s}}^{\infty} even.p$ - $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p$ = -2^s

$1 \Longleftrightarrow (2^s - 1). \sum_{\substack{n=s \\ s/s}}^{\infty} even.p$ = -2^s

$1 \Longleftrightarrow \sum_{\substack{n=s \\ s/s}}^{\infty} even.p = -2^s/(2^s - 1)$ with $S \neq 0$

** The suite of Theorem and notion 1 of Zero :

We have : $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + 2^{8s} + 2^{9s} + 2^{10s} + \ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this sum by 2^s until the infinity?

we multiply $\mathbf{2^s}$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p$ and we get as a result this :

$$2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \ldots\ldots\ldots\ldots$$

Then $2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = \sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 2^s$

We are going to multiply again the result by 2 and we get this :

$\boxed{2 =}$ $2^s.(2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \ldots\ldots\ldots\ldots)$

$2 \Longleftrightarrow 2^s.2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 2^s.2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = \sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 2^s - 2^{2s}$

we continue repeating multiplying the result by 2 and we get this :

$2 \Longleftrightarrow 2^s.(2^s.2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \ldots\ldots\ldots\ldots)$

$$2 \Longleftrightarrow 2^s.2^s.2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots\dots\dots$$

Then we get $2 \Longleftrightarrow 2^s.2^s.2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= \sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;- 2^s - 2^{2s} - 2^{3s}$

As a result $2 \Longleftrightarrow 2.2.2.\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= \sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;- (\,2^s + 2^{2s} + 2^{3s}\,)$

We continue to repeat multiplying the result by 2 until the infinity and we get

$$2 \Longleftrightarrow 2^s.2^s.2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots\dots\dots$$

***2^s** (repeating the multiplication by **2^s** until infinity)

$$2^s*2^s*2^s*\dots\dots\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= \sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;- (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots)$$

we have $\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots\dots$

we replace the right side of the result by $\sum_{\substack{n=s\\ s/s}}^{\infty} even.p$ and we get this :

$$2 \Longleftrightarrow 2^s*2^s*2^s*\dots\dots\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= \sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;- \sum_{\substack{n=s\\ s/s}}^{\infty} even.p$$

As a result we get :

$$2 \Longleftrightarrow 2^s*2^s*2^s*\dots\dots\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= 0$$

We have $\sum_{\substack{n=s\\ s/s}}^{\infty} even.p \;= -\,2^s/(2^s - 1)$

We substitute in the previous equation and we get :

$$2 \Longleftrightarrow 2^s*2^s*2^s*\dots\dots*(\,-\,2^s/(2^s - 1)\,) = 0$$

Then : $2^s*2^s*2^s*\dots\dots = 0$

As a conclusion, we can say that if we multiply a number that its power is S (hence S is a complex number) by itself until the infinity, we get 0 zero as a result.

We have : $1 \Longleftrightarrow 2^s*2^s*2^s*\dots\dots = 0$

$$1 \Longleftrightarrow 2^{(s+s+s+\dots\dots\dots)} = 0$$

$$1 \Longleftrightarrow \log(\,2^{(s+s+s+\dots\dots\dots)}\,) = \log(\,0\,)$$

$1 \Longleftrightarrow$ S+S+S+S+S+......................= log (0) = Z (0)

$1 \Longleftrightarrow$ S*(1+1+1+1+1+...............) = log (0) = Z (0)

1 $\Longleftrightarrow$ S * log (0) = log (0) = Z(0)

As we know that there is only **just one absorbent element that is zero 0** , hence S*0 = 0

The new **theorem and notion 1 of Zero** proves that there is **another absorbent element that is**

Log (0) or Z(0) hence log(0) = Z(0) and S*log(0) = log(0) , S*Z(0) = Z(0)

Based on this **theorem and notion 1 of Zero**, we find that :

3+3+3+3+3+………………………………………………………… = log(0) = Z(0)

$\boldsymbol{\pi + \pi + \pi + \pi + \pi +}$**……………………………………………= log(0) = Z(0)**

√2+√2+√2+√2+√2+……………………………………………..= log(0) = Z(0)

S+S+S+S+S+…………………………………………………………= log(0) = Z(0)

Thanks to **theorem and notion 1 of Zero**, we arrive to break the classical rules of mathematics and postulate. One of **this postulate said** that there is **only one absorbent element that is 0 zero**.This **Theorem and notion 1 of Zero** proves that there is **another absorbent element .**

Theorem and notion 1 of Zero gives a birth and the light of new and modern mathematics ,and raise of relative mathematics

In old and classical mathematics we have :

3+3+3+3+3+………………………………………………………… = +∞

$\pi + \pi + \pi + \pi + \pi +$……………………………………………= +∞

√2+√2+√2+√2+√2+……………………………………………..= +∞

S+S+S+S+S+…………………………………………………………= +∞ or -∞ hence S is a complex number

All these results are concerned as postulate that is not the case in modern relative mathematics

so **Theorem and notion 1 of Zero** broke classical rules and brought new notions , another notion that came to existence is the non existence of the infinity +∞ and -∞

** Formula 6:

We have :

$$\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots\dots\dots$$

Question: what will be the result if we repeat multiplying this sum by 1/2 until the infinity?

we multiply $\mathbf{1/2^s}$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p$ and we get as a result this :

$$1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots\dots\dots\dots)$$

Then $$1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 1 = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots\dots\dots\dots$$

We are going to multiply again the result by $\mathbf{1/2^s}$ and we get this :

$$\boxed{2 =} \quad 1/2^s.(1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 1 = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots\dots\dots\dots)$$

$$2 \Longleftrightarrow 1/2^s * 1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 1/2^s = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots.)$$

$$2 \Longleftrightarrow 1/2^s * 1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 1/2^s - 1 = (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots.)$$

We repeat multiplying again the result by 1/2 and we get this :

$$2 \Longleftrightarrow 1/2^s * (1/2^s * 1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 1/2^s - 1 = (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots)$$

$$2 \Longleftrightarrow 1/2^s * 1/2^s * 1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - 1/2^{2s} - 1/2^s = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots.)$$

$$2 \Leftrightarrow 1/2^s * 1/2^s * 1/2^s.\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - (1/2^s + 1/2^{2s}) = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \dots.)$$

We continue to repeat multiplying the result by $\mathbf{1/2^s}$ until the infinity and we get :

$$\Leftrightarrow 1/2^s * 1/2^s * 1/2^s * 1/2^s * \dots\sum_{\substack{n=s \\ s/s}}^{\infty} even.p - (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + \dots) = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + \dots.)$$

We have :

$1/2^s * 1/2^s * 1/2^s * \dots\dots\dots\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 0$ we are going to give a proof for this later on

So the equation will be :

$- (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.)$

$\Longleftrightarrow -1 - (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.$

As a result, this is the final result if we multiply $1/2^s$ by this series until the infinity

Notice: if we want to justify this result , we are going to multiply this last result by $1/2^s$,and we will get the same result

We have :

$-1 - (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.$

Let us multiply this infinite series by $1/2^s$

$1/2^s * (-1 - (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.)$

$-1/2^s - (1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.)$

$-(1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.)$

$- 1 - (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.)$

So we get the same result as before .

We have : $-1 - (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.$

$\Longleftrightarrow (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.) + 1 + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 0$

$\Longleftrightarrow (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.) + 1/2^0 + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots) = 0$

Let us denote this infinite series $1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots$ by $\sum_{n=1}^{+\infty} 1/2^{\mathbf{ns}}$

Hence : $\sum_{n=1}^{+\infty} 1/2^{\mathbf{ns}} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots$

Let us denote this infinite series $2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.$ by $\sum_{n=-1}^{-\infty} 1/2^{\mathbf{ns}}$

Hence : $\sum_{n=-1}^{-\infty} 1/2^{\mathbf{ns}} = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots.$

Then we get : $\sum_{n=1}^{+\infty} 1/2^{\mathbf{ns}} \mathbf{+ 1/2^{0s}} \sum_{n=-1}^{-\infty} 1/2^{\mathbf{ns}} \mathbf{=0}$

$\sum_{n \in Z} 1/2^{\mathbf{ns}} \mathbf{=0}$ **this is Formula 6**

** Always with the theorem and notion 2 of Zero,and from classical mathematics to new and modern mathematics and relativity :

Depending on Formula 6 , we have proved that the sum of positive number that have complex number as a power is not a positive number as a result , and as we always know , but we get zero 0 as a result .

From this result we can see that if we add the infinite series $\sum_{n=1}^{+\infty} 1/2^{\mathbf{ns}}$ to this infinite series

$\sum_{n=-1}^{-\infty} 1/2^{\mathbf{ns}}$, we will get :

$(2^{s} + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} ....) + (1/2^{s} + 1/2^{2s}+ 1/2^{3s}+ 1/2^{4s} +2^{5s} +2^{6s} +2^{7s} ...) = - 1 = i^{2}$

** Formula 7:

we will get :we have even pure number that are written like this : $\mathbf{2^{ns}}$

<u>Question: what will be the result if we make the addition of the reciprocal of these pure numbers?</u>

Let us denote : $\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +......$

Now , let us calculate the sum of $\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p}$

we have: $\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +......$

$*\mathbf{1/2^s}$ we are going to multiply $\mathbf{1/2^s}$ by $\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p}$ and we get as a result this :

$$1/2^s.\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +......$$

We have: $\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} - 1/2^s = 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +......$

Let us replace $(1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +..)$with its value and we get as a result this :

$$1/2^s.\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = \underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} - 1/2^s$$

$$1= \quad 1/2^s.\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} - \underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = -1/2^s$$

$$1 \Longleftrightarrow (1/2^s - 1).\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = -1/2^s$$

$$1 \Longleftrightarrow (1\text{-}2^s/2^s).\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = -1/2^s$$

$$1 \Longleftrightarrow (2^s\text{-}1\ /2^s).\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = 1/2^s$$

$$1 \Longleftrightarrow (2^s -1).\underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = 1$$

$$1 \Longleftrightarrow \underset{s/s}{\sum_{n=s}^{\infty}} \overline{even.p} = \mathbf{1/\,(2s -1)} \qquad \textbf{with } S \neq 0$$

This formula is **Formula 7**

Question: what will be the result if we repeat multiplying this infinite serie by $1/2^s$ until the infinity?

we multiplied $\mathbf{1/2^s}$ by $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p}$ and we got as a result this :

$$1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots\ldots\ldots\ldots$$

$$1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = \sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} - 1/2^s$$

We are going to multiply again the result by $\mathbf{1/2^s}$ and we get this :

$$1/2^s*(1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots\ldots\ldots\ldots)$$

$$1/2^s*1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots\ldots\ldots\ldots$$

$$1/2^s*1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = \sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} - 1/2^s - 1/2^{2s}$$

we repeat multiplying $\mathbf{1/2^s}$ by $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p}$ and we get as a result this :

$$1/2^s*(1/2^s*1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots\ldots\ldots\ldots)$$

$$1/2^s*1/2^s*1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots\ldots\ldots\ldots$$

$$1/2^s*1/2^s*1/2^s.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = \sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} - 1/2^s - 1/2^{2s} - 1/2^{3s}$$

We continue to repeat multiplying the result by $\mathbf{1/2^s}$ until the infinity and we get :

$$1/2^s*1/2^s*1/2^s\ldots\ldots\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = \sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} - (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots)$$

we have $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots\ldots.$

Let us replacing $= (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots\ldots.)$ with its value which is $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p}$

We get this as a result **:** $\mathbf{1/2^s*1/2^s*1/2^s*\ldots\ldots\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = \sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} - \sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p}}$

$$\mathbf{1/2^s*1/2^s*1/2^s*\ldots\ldots\sum_{\substack{n=s\\ s/s}}^{\infty} even.p = 0}$$

We have $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{even.p} = 1/(2^s - 1)$ and $1/(2^s - 1) \neq 0$ so the equation will be

$$\mathbf{1/2^s*1/2^s*1/2^s\ldots\ldots\ldots\ldots = 0}$$

So depending on **Theorem and notion 1 of Zero** , if we multiply the number **$1/2^s$** by itself until the infinity , we will get zero 0 .

we have :

2 = $(1/2^s)* (1/2^s)* (1/2^s)* (1/2^s)* (1/2^s)*$.......... = 0

2 $\Longleftrightarrow$ $(1/2^s)* (1/2^s)* (1/2^s)* (1/2^s)* (1/2^s)*$.......... = 0

2 $\Longleftrightarrow$ $(1/2)^s * (1/2)^s * (1/2)^s * (1/2)^s * (1/2)^s *$.......... = 0

2 $\Longleftrightarrow$ $(1/2)^{(s+s+s+s+s+s+.......)} = 0$

2 $\Longleftrightarrow$ $2^{-(s+s+s+s+s+s+.......)} = 0$

2 $\Longleftrightarrow$ $\text{Log}(2^{-(s+s+s+s+s+s+.......)}) = \text{Log}(0) = Z(0)$

2 $\Longleftrightarrow$ $-(s+s+s+s+s+........) = \text{Log}(0) = Z(0)$

2 $\Longleftrightarrow$ $-s*(1+1+1+1+1+........) = \text{Log}(0) = Z(0)$

2 $\Longleftrightarrow$ $-s*\log(0) = -s*Z(0) = \log(0) = Z(0)$

So we can get as a conclusion that **log(0) that is Z(0) plays the same role as a zero 0 , so log(0) is an absorbing element as a zero 0 .**

** Formula 8:

We have : $\sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +......$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p}$ by 2^s until the infinity

We have :

$$\sum_{n=1}^{\infty} \overline{even.p} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +...........$$

we multiplied **2^s** by $\sum_{n=1}^{\infty} \overline{even.p}$ and we got as a result this :

$$2^s*\sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} = 1+ (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +...........)$$

$$2^s*\sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} - 1 = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +...........$$

we repeat multiplying the result by **2^s** and we get this :

$$2^s*(2^s*\sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} - 1 = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} +......)$$

$2^s * 2^s * \sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} \;\; - 2^s = 1 + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots)$

$2^s * 2^s * \sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} \; - 2^s - 1 = (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots)$

We continue to repeat multiplying the result by $\mathbf{2^s}$ and we get :

$2^s * (2^s * 2^s * \sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} - 2^s - 1 = (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots)$

$2^s * 2^s * 2^s * \sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} - 2^{2s} - 2^s = 1 + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots)$

$2^s * 2^s * 2^s * \sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} - (2^s + 2^{2s}) = 1 + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots)$

We continue to repeat multiplying the result by $\mathbf{2^s}$ until the infinity and we get :

$\mathbf{2^s * 2^s * 2^s * \ldots . \sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} \;\; - (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + \ldots ..) = 1 + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + \ldots)}$

We have : $2^s * 2^s * 2^s * \ldots\ldots\ldots . \sum_{\substack{n=s \\ s/s}}^{\infty} \overline{even.p} \;\; = 0$

Then the equation will be :

$-(2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \ldots ..) = 1 + (1/2^{1s} + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots)$

$(1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots) + 1 + (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \ldots ..) = 0$

$(1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} + \ldots) + 2^{0s} + (2^{1s} + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + \ldots ..) = 0$

Let us denote this infinite series $2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots .$ by $\sum_{n=1}^{+\infty} 2^{\mathbf{ns}}$

Hence : $\sum_{n=1}^{+\infty} 2^{\mathbf{ns}} = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots .$

Let us denote this infinite series $1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} \ldots$ by $\sum_{n=-1}^{-\infty} 2^{\mathbf{ns}}$

Hence : $\sum_{n=-1}^{-\infty} 2^{\mathbf{ns}} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + 1/2^{6s} + 1/2^{7s} \ldots$

Then we get : $\sum_{n=-1}^{-\infty} 2^{\mathbf{ns}} \mathbf{+ 2^{0s}} \;\; \sum_{n=1}^{+\infty} 2^{\mathbf{ns}} \mathbf{=0}$

$\sum_{n \in Z} 2^{\mathbf{ns}} \mathbf{=0}$ **this is Formula 8**

** The equality and similarity of Formula 8 and Formula 6

$$\sum_{n=-1}^{-\infty} 1/2^{ns} + \mathbf{1/2^{0s}} \sum_{n=1}^{+\infty} 1/2^{ns} = \sum_{n=-1}^{-\infty} 2^{ns} + \mathbf{2^{0s}} \sum_{n=1}^{+\infty} 2^{ns} = \mathbf{0}$$

$$\sum_{n\in Z} 1/2^{ns} = \sum_{n\in Z} 2^{ns} = \mathbf{0}$$

** The notion 3 of for the equation of Zero and the introduction to complex numbers:

We have : $\sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7$ ....

And we have : $\log(1/4) = \log((1/2)^2) = 2\log(1/2) = -2$ then $\log(1/2) = -1$

So the equation will be :

1 $\quad 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 .... = 2\log(1/2)$

So we multiply this equation by 1/2 and we get:

1 $\Longleftrightarrow 1+(2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ....) = \log(1/2)$

1 $\Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 .... = \log(1/2) - 1$

1 $\Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 .... = 1* \log(1/2) - 1$

We have $1 = 1/2^0$ so the equation will be : 1 $\Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ... = 1/2^0 * \log(1/2) - 1/2^0$

We repeat multiplying for the 2nd time this infinite series or this equation by 1/2 and we get :

*1/2 $\quad$ 1 $\Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ... = 1/2^0 * \log(1/2) - 1/2^0$

1 $\Longleftrightarrow 1+(2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ....) = 1/2^1 * \log(1/2) - 1/2^1$

1 $\Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 .... = 1/2^1 * \log(1/2) - 1/2^1 - 1/2^0$

We repeat multiplying for the 3rd time this infinite series or this equation by 1/2 and we get :

*1/2 $\quad$ 1 $\Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 .... = 1/2^1 * \log(1/2) - 1/2^1 - 1/2^0$

1 $\Longleftrightarrow 1 + (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ....) = 1/2^2 * \log(1/2) - 1/2^2 - 1/2^1$

1 $\Longleftrightarrow (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ....) = 1/2^2 * \log(1/2) - 1/2^2 - 1/2^1 - 1/2^0$

We repeat multiplying for the 4rd time this infinite series or this equation by 1/2 and we get :

*1/2 $\quad$ 1 $\Longleftrightarrow 1+(2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ....) = 1/2^3 * \log(1/2) - 1/2^3 - 1/2^2 - 1/2^1$

1 $\Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 ......= 1/2^3 * \log(1/2) - 1/2^3 - 1/2^2 - 1/2^1 - 1/2^0$

$1 \Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 \ldots\ldots = 1/2^3 * \log(1/2) - (1/2^3 + 1/2^2 + 1/2^1 + 1/2^0)$

$1 \Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 \ldots\ldots = 1/2^3 * \log(1/2) - (2^0 + 2^1 + 2^2 + 2^3)/2^3$

When we continue to multiply this infinite series or equation by 1/2 untill the infinity we arrive to the infinity and we get: $1 \Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 \ldots\ldots = 1/2^n * \log(1/2) - (2^0 + 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.)/2^n$

$1 \Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 \ldots\ldots = 1/2^n * \log(1/2) - (2^0)/2^n - (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.)/2^n$

$1 \Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 \ldots\ldots = 1/2^n * \log(1/2) - 1/2^n - (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.)/2^n$

$1 \Longleftrightarrow 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 \ldots\ldots = 1/2^n * \log(1/2) - 1/2^n - 1/2^n (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.)$

$1 \Longleftrightarrow (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots\ldots) + 1/2^n (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.) = 1/2^n * \log(1/2) - 1/2^n$

$1 \Longleftrightarrow (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots\ldots) + 1/2^n (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.) = 1/2^n * (\log(1/2) - 1)$

$1 \Longleftrightarrow (1 + 1/2^n)(2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.) = 1/2^n * (\log(1/2) - 1)$

we have log(1/2) = - 1 and we have $\sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots\ldots = -2$

let us substitute in the previous equation , so we get this:

$1 \Longleftrightarrow (1 + 1/2^n)(-2) = 1/2^n * (-2)$

So when $n \longrightarrow +\infty$ $\quad 1 \Longleftrightarrow 1 + 1/2^n = 1/2^n$

$$1 \Longleftrightarrow 1 = 0$$

** Formula 9:

Based on classical mathematics , we can say that there is a contradiction about the result that we get because $1 \neq 0$. thanks to the notion 3 for the equation of zero , we arrive to move from classical mathematics to new and modern and relative mathematics , hence the contradiction is relative

So the equation : 1 = 0

is equal to : 1/2 + 1/2 = 0

as a result we get : **1/2 = - 1/2**

This result is called **Formula 9**

Another method to get the same result by using $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p$

We have : $\sum_{\substack{n=s \\ s/s}}^{\infty} even.p = 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots. = -2^s/(2^s - 1)$

$1 \Longleftrightarrow 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} \ldots. = (2^s/(2^s - 1)) * (-1)$

We have log (1/2) = - 1 , let us substitute in previous infinite series , so we get this :

$1 \Longleftrightarrow 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} .... = (2^s /(2^s - 1))* \log(1/2)$

$*1/2^s$ So we multiply this infinite series by $1/2^s$ and we get this :

$1 \Longleftrightarrow 1+(2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} ....) = (1 /(2^s - 1))* \log(1/2)$

$1 \Longleftrightarrow (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} ....) = (1 /(2^s - 1))*1* \log(1/2) - 1$

We have $1 = 1/2^0$, let us substitute in previous infinite series , so we get this :

$1 \Longleftrightarrow (2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} ....) = (1 /(2^s - 1))*1/2^0* \log(1/2) - 1/2^0$

So we repeat multiplying this infinite series by $1/2^s$ and we get this :

$1 \Longleftrightarrow 1+(2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} ....) = (1 /(2^s - 1))*1/2^s* \log(1/2) - 1/2^s$

$1 \Longleftrightarrow 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} .... = (1 /(2^s - 1))*1/2^s* \log(1/2) - 1/2^s - 1/2^0$

$*1/2^s$ So we repeat again multiplying this infinite series by $1/2^s$ and we get this :

$1 \Longleftrightarrow 1+(2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} ....) = (1/(2^s - 1))*1/2^{2s}* \log(1/2) - 1/2^{2s} - 1/2^s$

$1 \Longleftrightarrow 2^s + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} +2^{6s} +2^{7s} .... = (1/(2^s - 1))*1/2^{2s}* \log(1/2) - 1/2^{2s} - 1/2^s - 1/2^0$

$*1/2^s$ So we repeat again multiplying this infinite series by $1/2^s$ and we get this :

$1 \Longleftrightarrow 1+(2^s +2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} ....)=(1/(2^s - 1))*1/2^{3s}* \log(1/2) - 1/2^{3s} - 1/2^{2s} - 1/2^s$

$1 \Longleftrightarrow 2^s +2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} ....= (1/(2^s - 1))*1/2^{3s}* \log(1/2) - 1/2^{3s} - 1/2^{2s} - 1/2^s - 1/2^0$

$1 \Longleftrightarrow 2^s +2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} ....=(1/(2^s - 1))*1/2^{3s}* \log(1/2) -(1/2^{3s} +1/2^{2s} +1/2^s +1/2^0)$

$1 \Longleftrightarrow 2^s +2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} ....=(1/(2^s - 1))*1/2^{3s}* \log(1/2) -((2^0+2^s+2^{2s}+2^{3s})/2^{3s})$

So when we repeat multiplying this infinite series by $1/2^s$ until the infinity , we get this :

$1 \Longleftrightarrow 2^s +2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} ....=(1/(2^s - 1))*1/2^{ns}* \log(1/2) -((2^0+2^s+2^{2s}+2^{3s}+...)/2^{ns})$

$1 \Longleftrightarrow 2^s+2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} ...=(1/(2^s - 1))*1/2^{ns}* \log(1/2) -2^0/2^{ns} -((2^s+2^{2s}+2^{3s}+...)/2^{ns})$

$1 \Longleftrightarrow 2^s+2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} ...=(1/(2^s - 1))*1/2^{ns}* \log(1/2) -1/2^{ns} -((2^s+2^{2s}+2^{3s}+...)/2^{ns})$

$1 \Longleftrightarrow 2^s+2^{2s}+2^{3s} +2^{4s}+2^{5s} +2^{6s} +2^{7s} ...=(1/(2^s -1))*1/2^{ns}* \log(1/2) -1/2^{ns} -1/2^{ns} *(2^s+2^{2s}+2^{3s}+...)$

$1 \Longleftrightarrow (2^s+2^{2s}+2^{3s} +2^{4s}+ ...)+1/2^{ns} *(2^s+2^{2s}+2^{3s}+2^{4s}+ ...)=(1/(2^s -1))*1/2^{ns}* \log(1/2) -1/2^{ns}$

$1 \Longleftrightarrow (1+ 1/2^{ns}) *(2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s} +2^{6s} +2^{7s} ...)=1/2^{ns}* (((1/(2^s -1))* \log(1/2)) - 1)$

$1 \Longleftrightarrow (1+ 1/2^{ns}) *(2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s} +2^{6s} +2^{7s} ...)=1/2^{ns}* (- (1/(2^s -1)) - 1)$

$1 \Longleftrightarrow (1+ 1/2^{ns}) *(2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s} +2^{6s} +2^{7s} ...)=1/2^{ns}*((- 1 -2^s +1)/(2^s -1))$

$1 \Longleftrightarrow (1+ 1/2^{ns}) *(2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s} +2^{6s} +2^{7s} \ldots)=1/2^{ns}*(-2^s /(2^s -1))$

We have $2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s} +2^{6s} +2^{7s} \ldots = \sum_{\substack{n=s \\ s/s}}^{\infty} even.p = -2^s /(2^s -1)$

We substitute this value in the previous equation and we get :

$1 \Longleftrightarrow (1+ 1/2^{ns}) *(-2^s /(2^s -1)) =1/2^{ns}*(-2^s /(2^s -1))$

$1 \Longleftrightarrow 1 + 1/2^{ns} =1/2^{ns}$

$1 \Longleftrightarrow 1 = 0$

Thanks to **Formula 9**

the equation 1 = 0

is equal to 1/2 = - 1/2

<u>Another method to get the same result by using Theorem and notion 1 of Zero</u>

Depending on Theorem and notion 1 of Zero , we have found that :

$(1/2^s)* (1/2^s)* (1/2^s)* (1/2^s)* (1/2^s)*\ldots\ldots\ldots\ldots = 0$

$2 \Longleftrightarrow 1/(2^{(s+s+s+\ldots\ldots\ldots)}) = 0$

$2 \Longleftrightarrow 1/(2^{Z(0)}) = 0$

$2 \Longleftrightarrow 1/(2^{Z(0)}) = 0/1$

$2 \Longleftrightarrow 1*1 = 0* 2^{Z(0)}$

$2 \Longleftrightarrow 1 = 0$

Thanks to **Formula 9**

the equation 1 = 0

is equal to 1/2 = - 1/2

** The notion 4 about complex numbers in modern mathematics , and geometric representation of complex numbers in new complex plane:

As I said before that groups of numbers like N and Z and D and Q and R have been created in order to solve problems that can not be solved using the previous groups of numbers , for example the group of numbers R is created in order to solve this kind of equation $X^2 = 2$,this equation can not be solved using the previous groups of numbers such as N or Z or D or Q , so the only group of numbers that can solve this equation is the group R that contains **√2** which is a solution for this equation, and **√2** does not belong to the previous groups of numbers (N and Z and D and Q) , but all numbers that belong to these groups of numbers

(N and Z and D and Q) are a part of the group R

Example: $1 \in N$ and also $1 \in R$ but **√2** $\notin$ N and **√2** $\in$ R

Following the same way and the same method that previous mathematicians followed to create previous groups of numbers (N , Z , D ,Q and R), mathematicians have created the new group of numbers ₵ , hence this group of numbers ₵ contains all the previous numbers that belong to previous groups these numbers can be written as follow :

Natural numbers can be written in a form of complex numbers like this :

$$1 = 1 + 0i \quad , \quad 155 = 155 + 0i \quad , \quad 17 = 17 + 0i$$

Integers numbers can be written in a form of complex numbers like this :

$$-7 = -7 + 0i \quad , \quad -19 = -19 + 0i \quad , \quad -197 = -197 + 0i$$

Decimal numbers can be written in a form of complex numbers like this :

$$1{,}76 = 1{,}76 + 0i \quad , \quad 8{,}75 = 8{,}75 + 0i \quad , \quad -3{,}4 = -3{,}4 + 0i \quad , \quad 0{,}5 = 0{,}5 + 0i$$

Rational numbers can be written in a form of complex numbers like this :

$$1/3 = 1/3 + 0i \quad , -1/3 = -1/3 + 0i \quad , 10/3 = 10/3 + 0i \ , -10/3 = -10/3 + 0i$$

Real numbers can be written in a form of complex numbers like this :

$$\sqrt{2} = \sqrt{2} + 0i \quad , \quad -\sqrt{3} = -\sqrt{3} + 0i \quad , \quad {}^{5}\sqrt{9} = {}^{5}\sqrt{9} + 0i \quad , - {}^{5}\sqrt{6} = - {}^{5}\sqrt{6} + 0i$$

As I said before , this group of numbers ₵ contains all the previous numbers that belong to previous groups

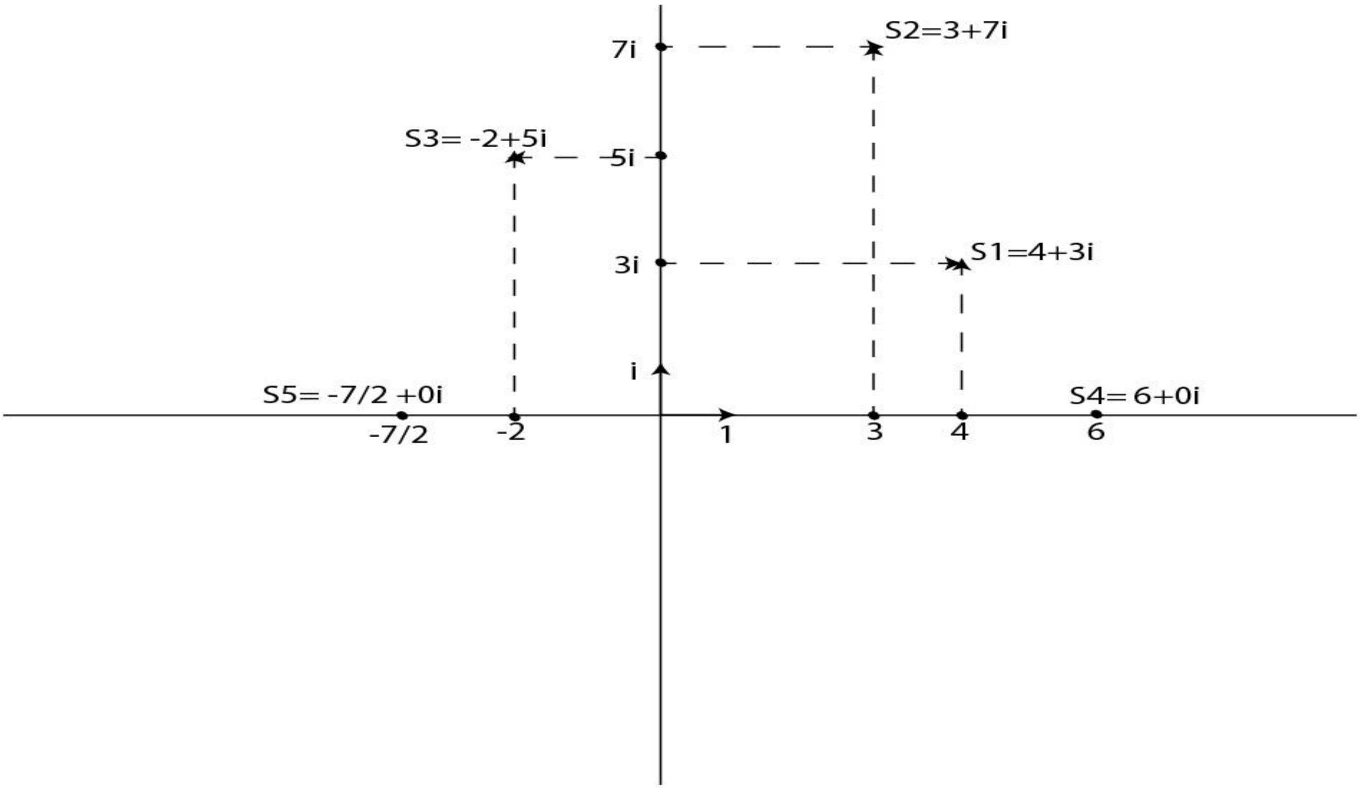
(N , Z , D ,Q and R) plus new complex numbers that do not belong to the previous groups (N , Z , D ,Q and R)

These new complex numbers are written as follow:

$$S_1 = \sqrt{7} + 2i \quad \text{hence } \sqrt{7} + 2i \notin N , Z , D , Q , R$$

$S_2 = -2 - 2i$, $S_3 = 1 + i$, $S_4 = 1/3 + i(\sqrt{3})/2$, $S_5 = 3i$

The geometric representation of complex numbers in Argand plane :



All the previous numbers that belong to previous groups (N , Z , D ,Q and R) belong to the X axis of Argand plane , but new complex numbers that are written as follow $(S = a + ib$ hence $b \neq 0$ and $S \in ₵)$ and does not belong to the previous groups of numbers , these new complex numbers exist on the complex space except the X axis

** The notion 4 about complex numbers:

As I said before, in order to solve such equation like : $X^2 = -1$, mathematicians have created and invented complex numbers group that contains all previous numbers that belong to previous groups (N , Z , D ,Q and R) and contains also new complex numbers that belong to ₵ group and does not belong to previous groups (N , Z , D ,Q and R) , example : $S = \sqrt{3} + 2i$

So mathematicians have followed the same method and the same notion as before to create complex numbers **which is WRONG** .

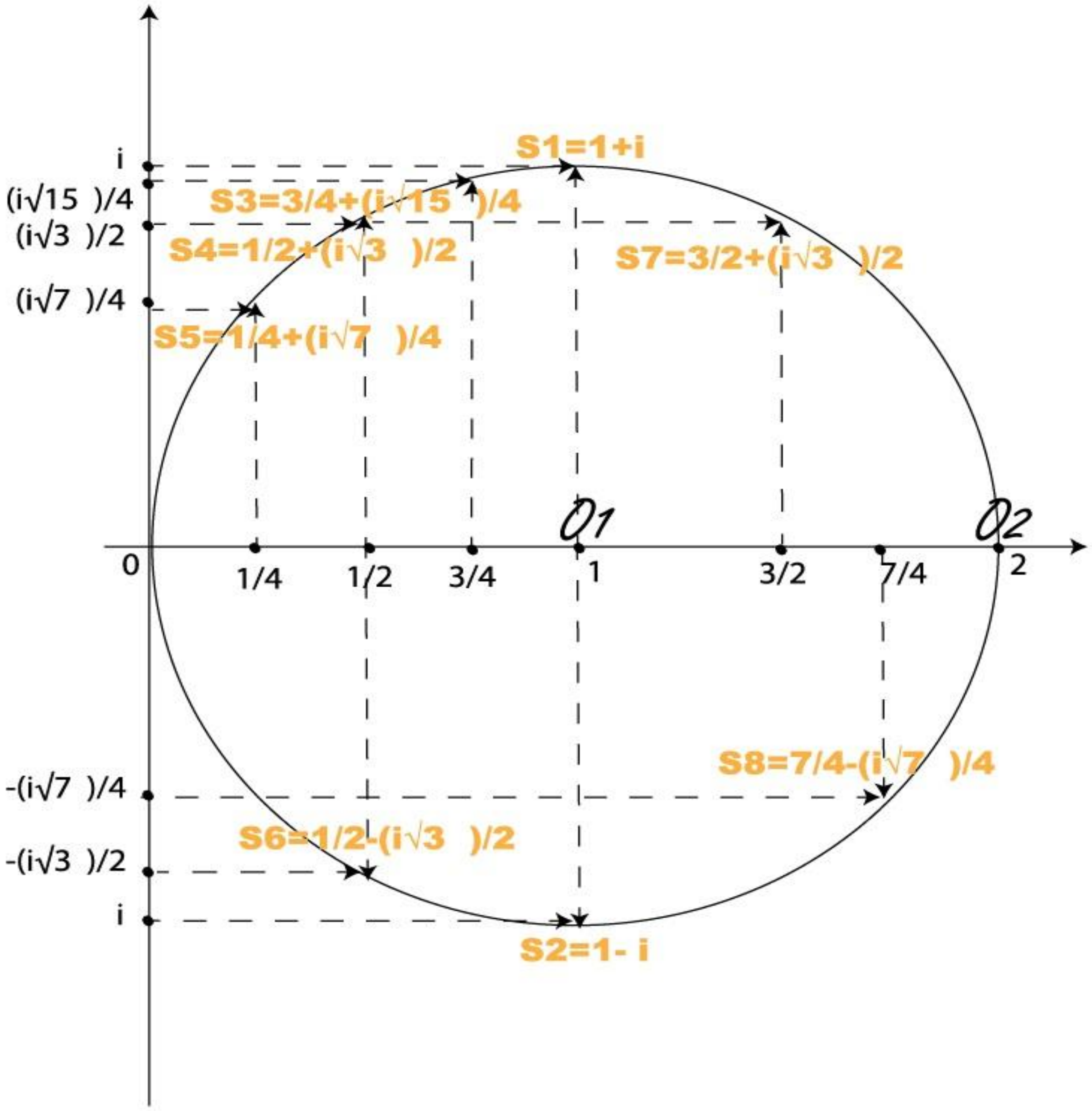
Far from what mathematicians wrote about complex numbers and thanks to new notion, **the notion 4** , we will give new and different notion concerning complex numbers , this notion will let us to move from classical mathematics to modern mathematics .

In this new notion, the definition of complex numbers is as follow :

the previous numbers that belong to previous groups (N , Z , D ,Q and R) are complex numbers that are written $S = a + 0i$

So any numbers of previous group is a complex number that can be written as S = a + 0i , and this number **a** can has different value of complex number depending on his position that it takes on the circumference that it belongs to .

Example : $S = 1 + 0i = 1$



In this complex plane , the number 1 is the center of the circle O_1 , we can say that 1 at the same time is a complex number because 1 = 1 + 0i , and is a real number . 1 as real number has many other complex values that belong to the circumference that its radius is 1 as it is mentioned on the complex plane the number 1 takes many complex value such as :

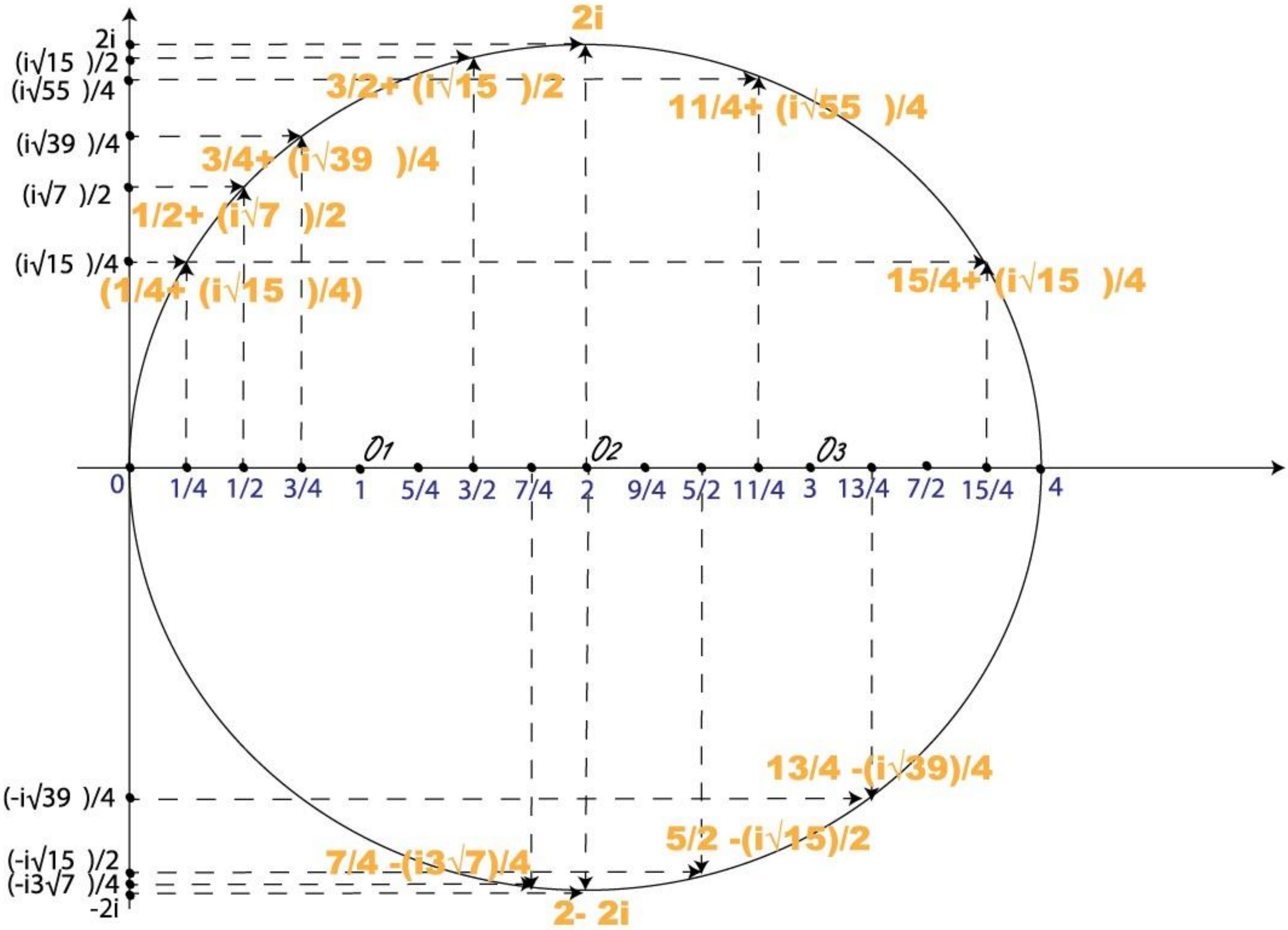
$1 = S_1 = 1+i$, $1 = S_2 = 1- i$, $1= S_3= 3/4 +i(\sqrt{15})/4$, $1= S_4= 1/2 +i(\sqrt{3})/2$

$1= S_5= 1/4 +i(\sqrt{7})/4$, $1= S_6= 1/2 - i(\sqrt{3})/2$, $1= S_7= 3/2 + i(\sqrt{3})/2$

$1= S_8= 7/4 -i(\sqrt{7})/4$

Notice : 1 it can take also the value 0 , hence $1= S_0= 0 = 0 + 0i$

Example : $S = 2 + 0i \;= 2$



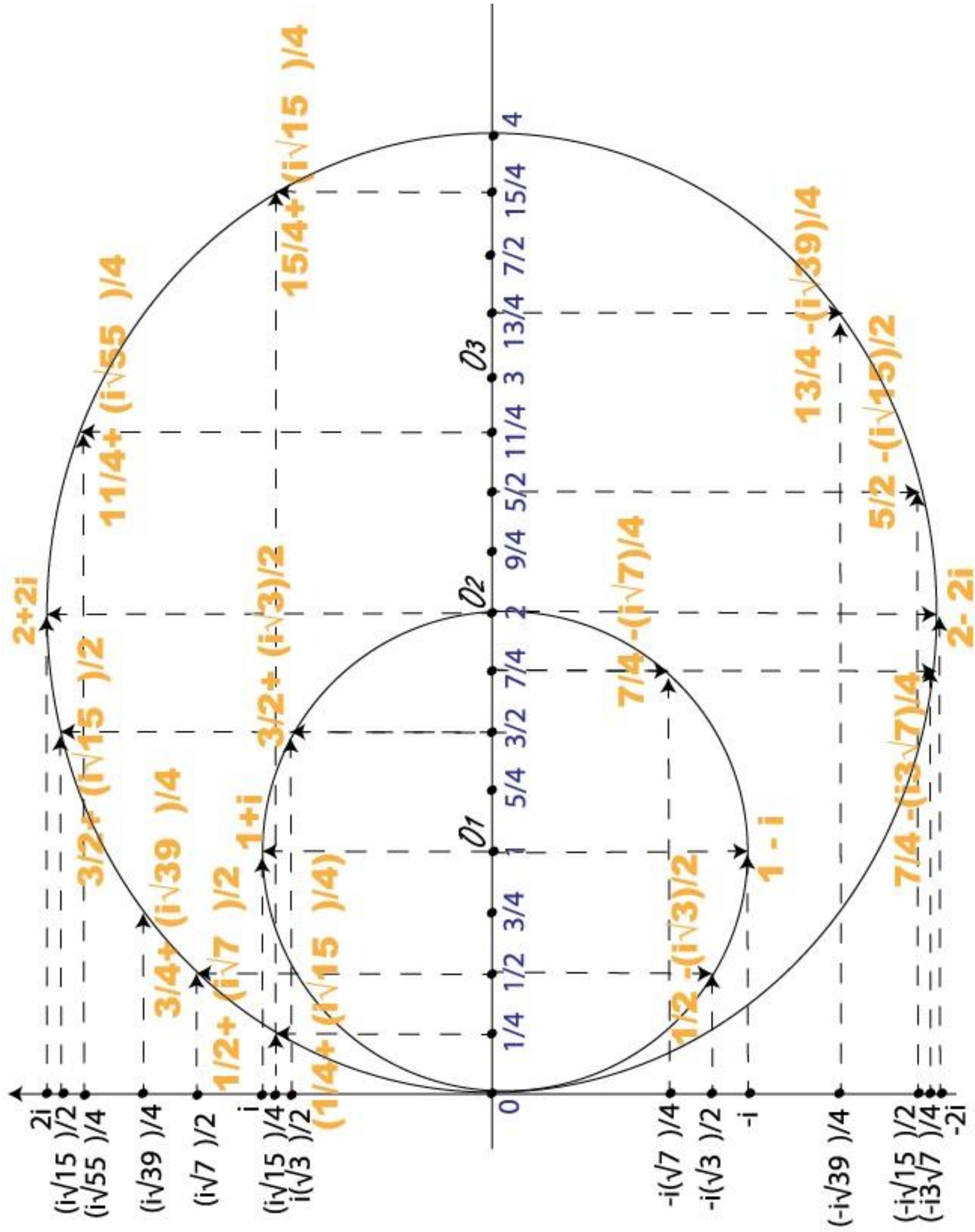
In this complex plane , the number 2 is the center of the circle O_2 , we can say that 2 at the same time is a complex number because 2 = 2 + 0i , and is a real number . 2 as real number has many other complex values that belong to the circumference that its radius is 2 as it is mentioned on the complex plane the number 2 takes many complex value such as :

$2 = S_1 = 2+2i$, $\quad 2 = S_2 = 2- 2i$, $\quad 1= S_3= 1/4 +i(\sqrt{15})/4$,

$1= S_4= 15/4 +i(\sqrt{15})/4$

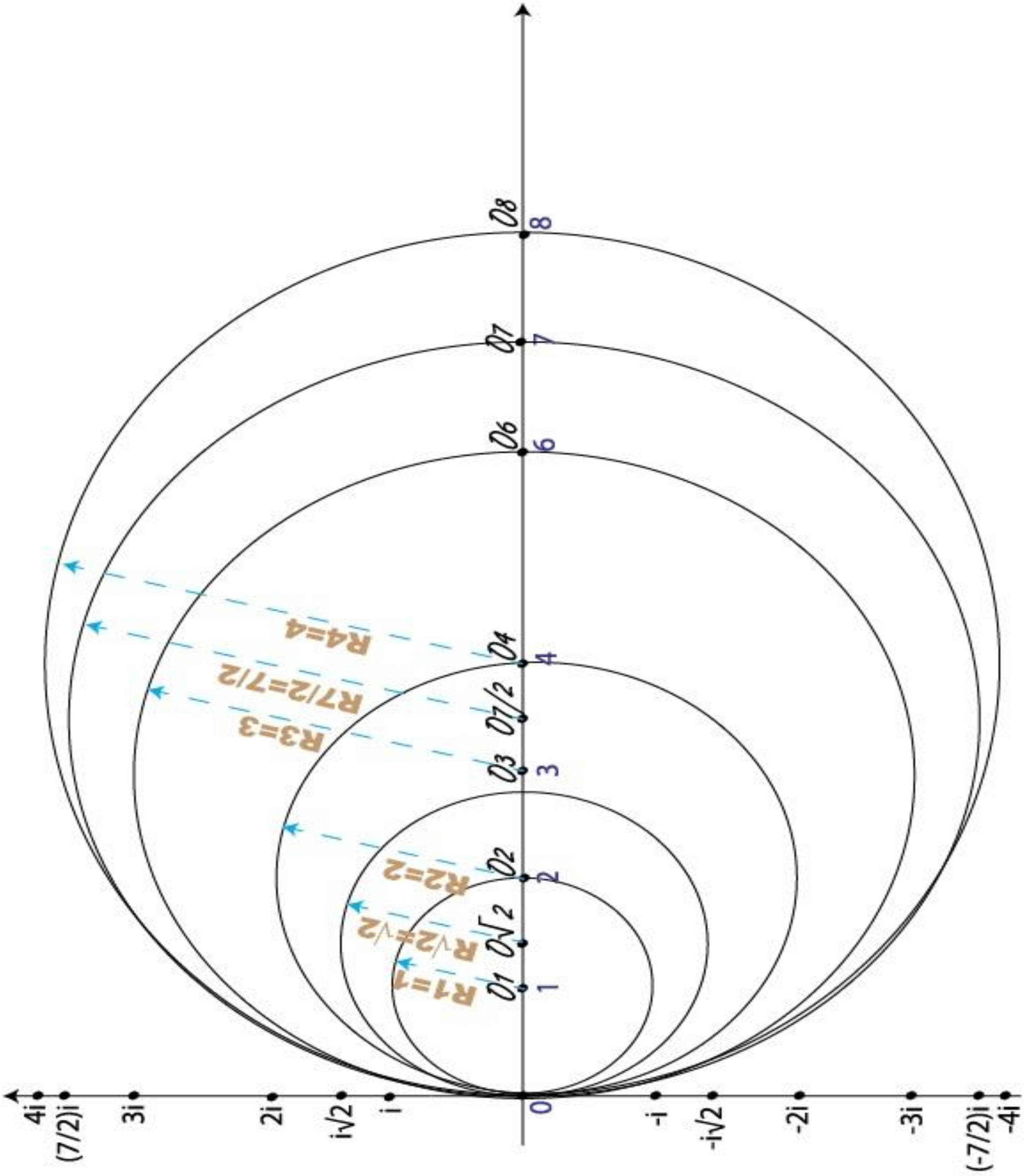
Notice : 2 it can take also the value 0 , hence $2= S_0= 0 = 0 + 0i$

Representation of number 1 and 2 in new complex plane:



In this new complex plane , we can see the representation of number 1 and number 2 , and some complex values that they can take

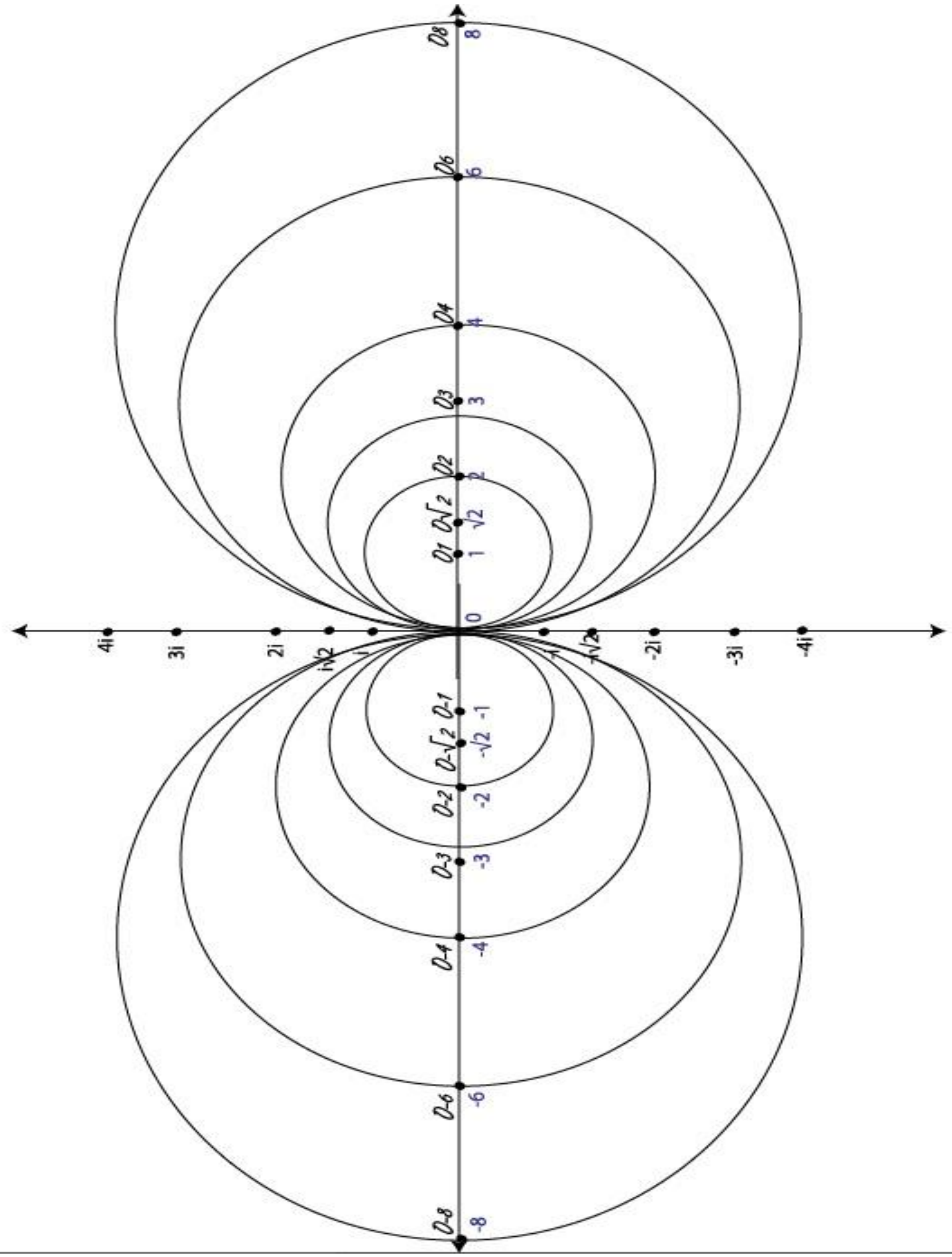
Representation of real numbers that are equal or greater than 1 in new complex plane: [1, + ∞ [:



In this new complex plane, we can see the representation of real numbers that are equal or greater than 1

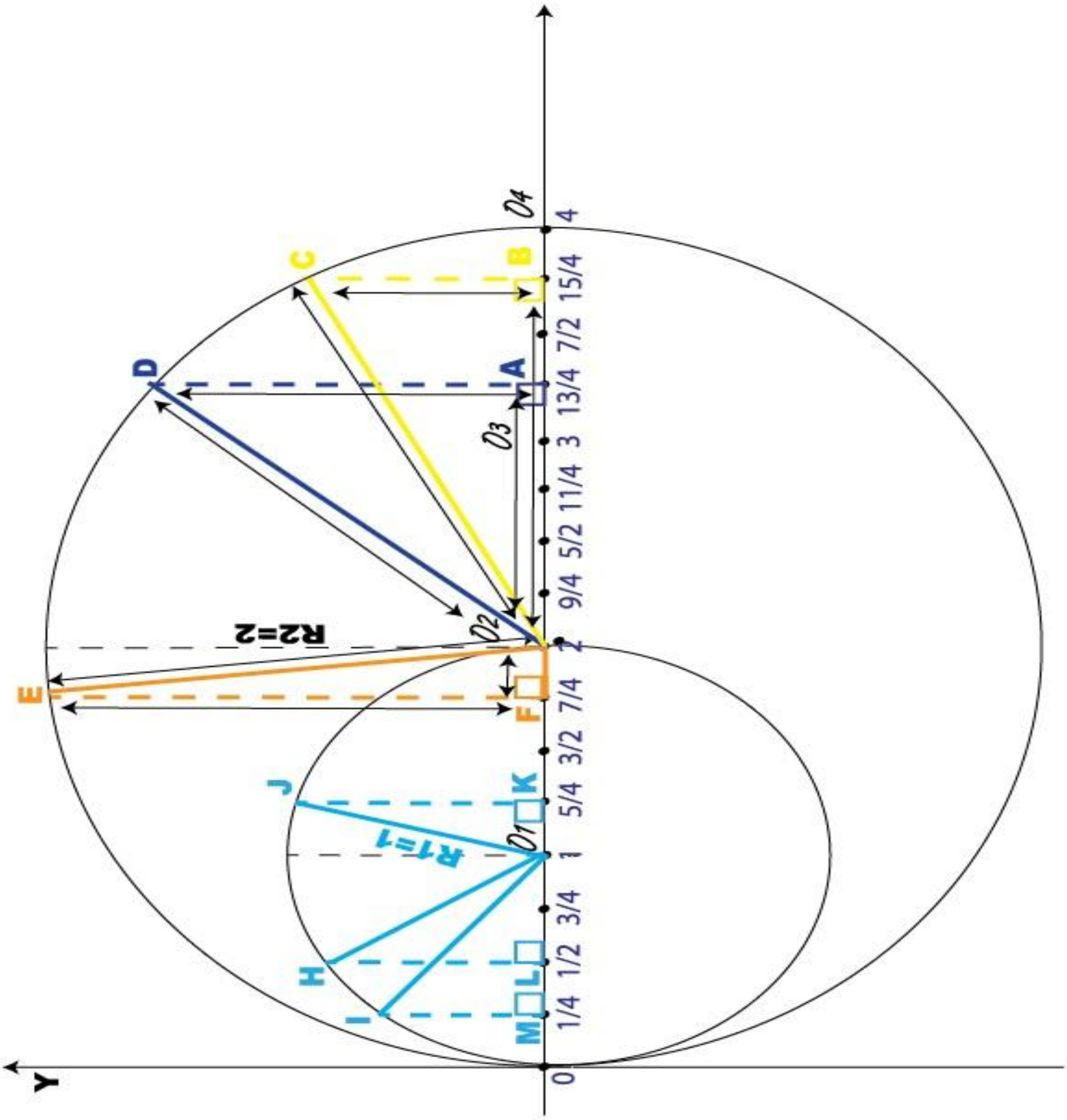
Hence **X ∈ [1, + ∞ [**

Representation of real numbers that belong to : X ∈]-∞,-1] U [1,+∞[:



In this new complex plane, we can see the representation of real numbers that belong to

this interval]-∞,-1] U [1,+∞[:



Let us calculate or find the ordinate value of these points depending on their abscissa values, the points are: (C ,D ,E , J ,H and I)

Let us find the ordinate value of a point I , $\mathbf{Y_i}$, knowing that **X_i = 1/4**

Let us calculate [IM]

in a given figure above , [O_2MI] is a right triangle , right angled at M

Using the Pythagoras theorem: $O_1M^2 + MI^2 = R_1^2$

Since $O_1M = R_1 – OM$

Therefore $(R_1 – OM)^2 + MI^2 = R_1^2$

On substituting giving values to this equation, we get:

$(1 - 1/4)^2 + MI^2 = 1^2$

$MI^2 = 1 - (1 - 1/4)^2$

$MI^2 = 1 - (3/4)^2$

$MI^2 = 1 - 9/16$

$MI^2 = (16 - 9)/16$

$MI^2 = 7/16$

$MI = \sqrt{7}/4$

Then **$Y_i = \sqrt{7}/4$** therefore **$S_i = 1/4 + i(\sqrt{7}/4)$**

As a result , **$S_i = 1/4 + i(\sqrt{7}/4)$** is the complex number that represents the number 1 because it belongs to the circumference that its radius is 1 and its center is O_1 .

Let us find the ordinate value of a point I , **Y_D** , knowing that **$X_i = 13/4$**

Let us calculate [AD]

In a given figure above , $[O_2AD]$ is a right triangle , right angled at A

Using the Pythagoras theorem: $O_2A^2 + AD^2 = R_2^2$

Since $O_2A = R_2 - O_4A$

Therefore $(R_2 - O_4A)^2 + AD^2 = R_2^2$

On substituting giving values to this equation, we get:

$(2 - 3/4)^2 + AD^2 = 2^2$

$AD^2 = 4 - (2 - 3/4)^2$

$AD^2 = 4 - (5/4)^2$

$AD^2 = 4 - (25/16)$

$AD^2 = (64 - 25)/16$

$AD^2 = 39/16$

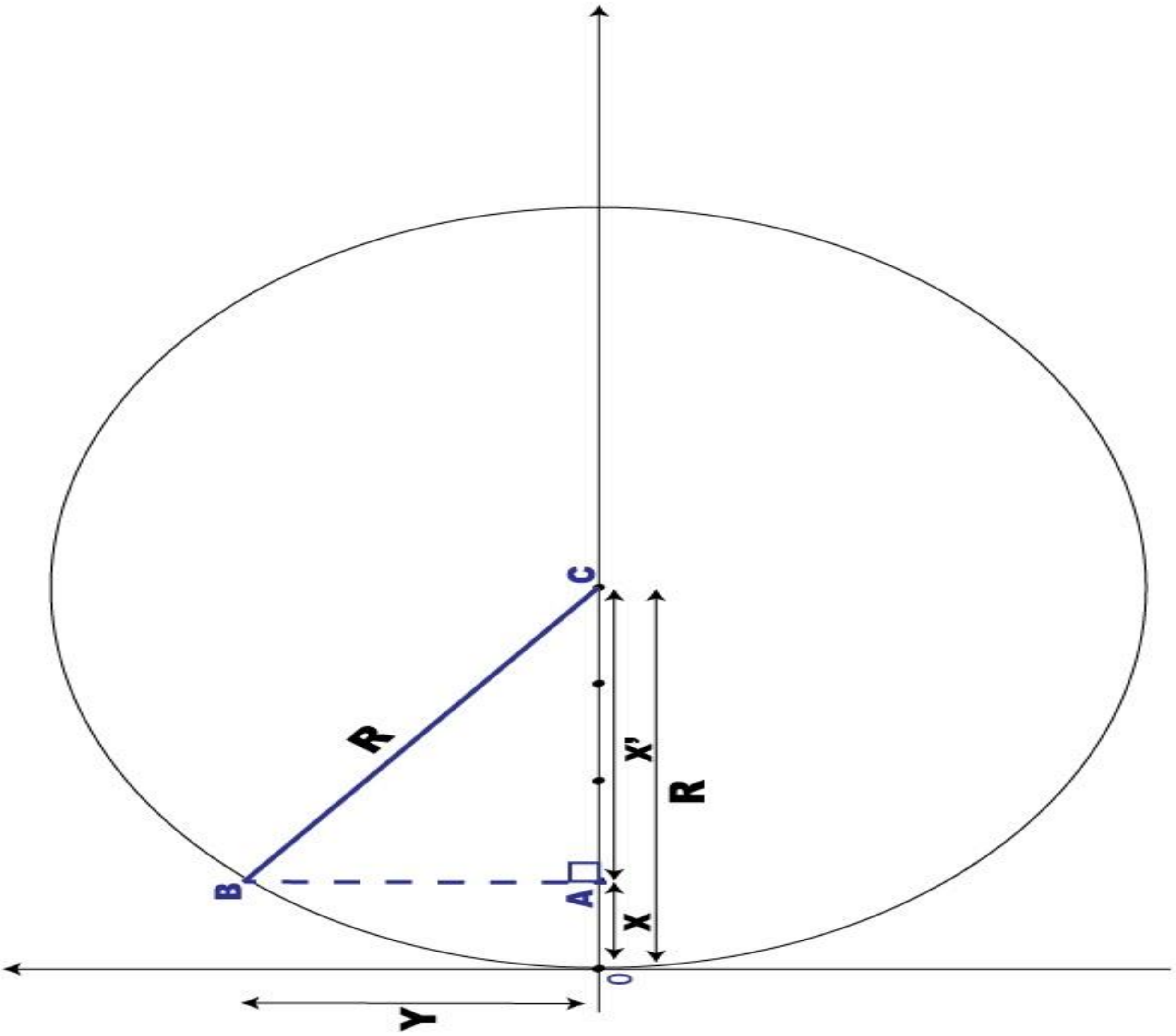
$MI = \sqrt{39}/4$

Then **$Y_D = \sqrt{39}/4$** therefore **$S_D = 13/4 + i(\sqrt{39}/4)$**

As a result , **$S_D = 13/4 + i(\sqrt{39}/4)$** is the complex number that represents the number 2 because it belongs to the circumference that its radius is 2 and its center is O_2 .

Using the same method, we get the ordinate value of other points (C , E , J , H)

Calculating real number using its complex number:



Let us calculate the real number using the ordinate value and abscissa value of complex number

So let us calculate R depending on the ordinate value and abscissa value

In a given figure above , [ABC] is a right triangle , right angled at A

Using the Pythagoras theorem: $X'^2 + Y^2 = R^2$

Since $X' = R - X$

Therefore $(R - X)^2 + Y^2 = R^2$

$R^2 + X^2 - 2RX + Y^2 = R^2$

$X^2 - 2RX + Y^2 = 0$

$-2RX = -(X^2 + Y^2)$

$2RX = X^2 + Y^2$

$R = (X^2 + Y^2)/2X$

Question : what is the real number that represent a complex number **S = 7/4 - i(√7/4)** ?

Since $R = (X^2 + Y^2)/2X$

Therefore $R = ((7/4)^2 + (-\sqrt{7}/4)^2) / 2.(7/4)$

$R = (49/16 + 7/16) / (7/2)$

$R = (56/16) / (7/2)$

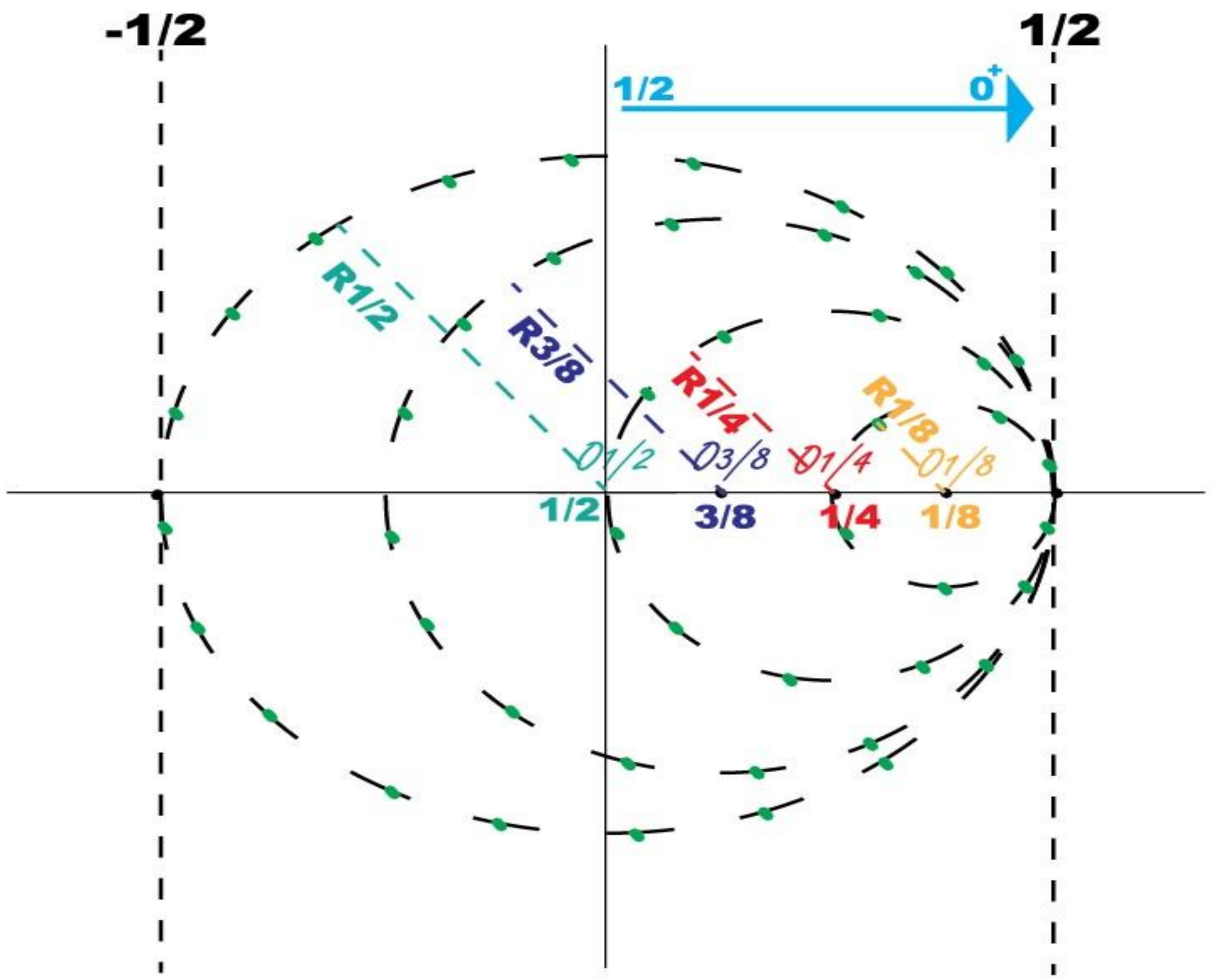
$R = (7/2) / (7/2)$

R = 1

The geometric representation of real number in the interval] -1 , 1 [:

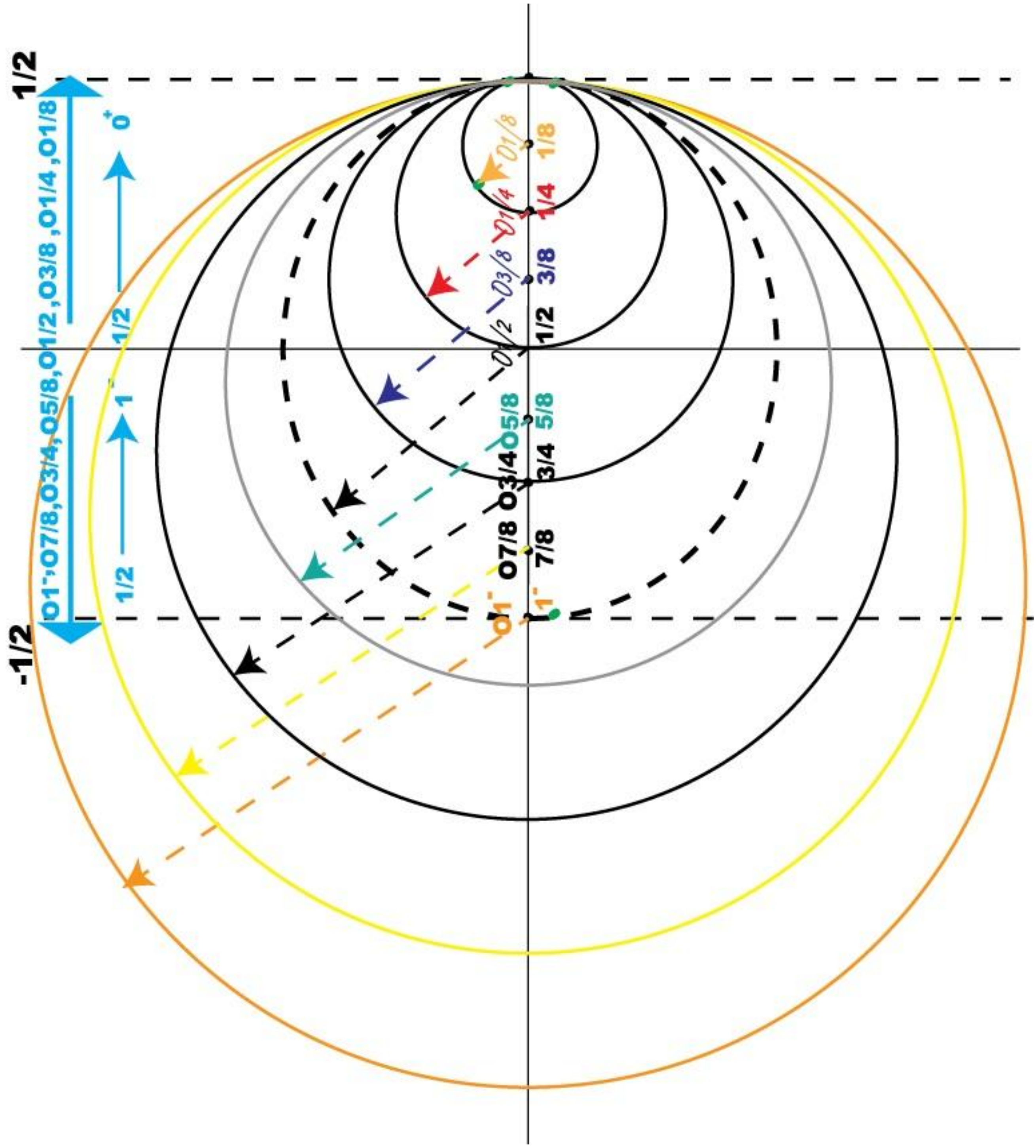
Depending on **Formula 9** we have **1/2 = - 1/2**

Representation of real numbers that belong to [0 , 1/2] in a complex plane :

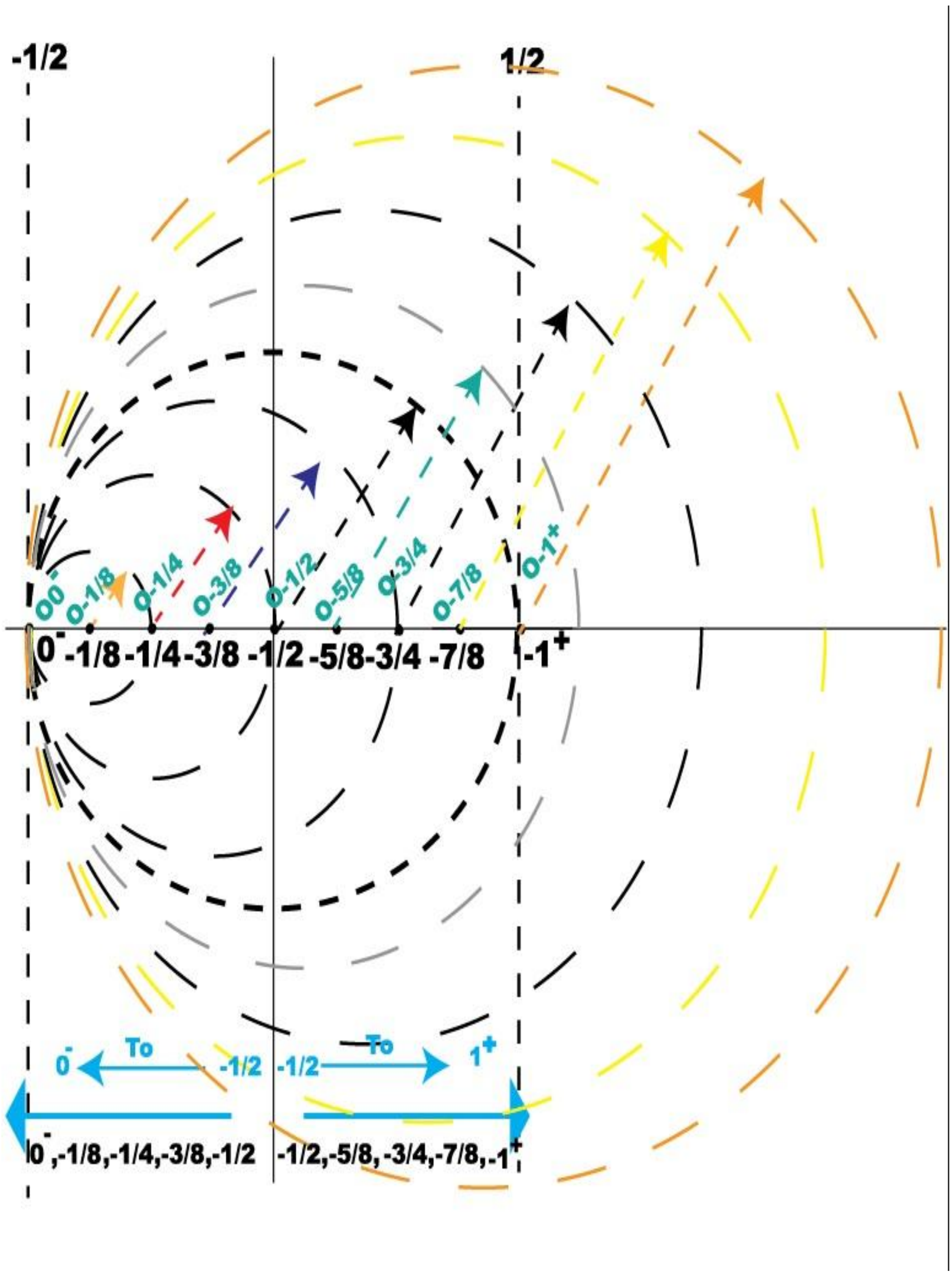


The real numbers in the interval [0 , 1/2] in a complex plane, are represented on the opposite side. This means that real numbers are represented from the right side to the left side . and as we have said before that any real number that has R as a value is represented by many complex number that belong to the circumference that its radius is R

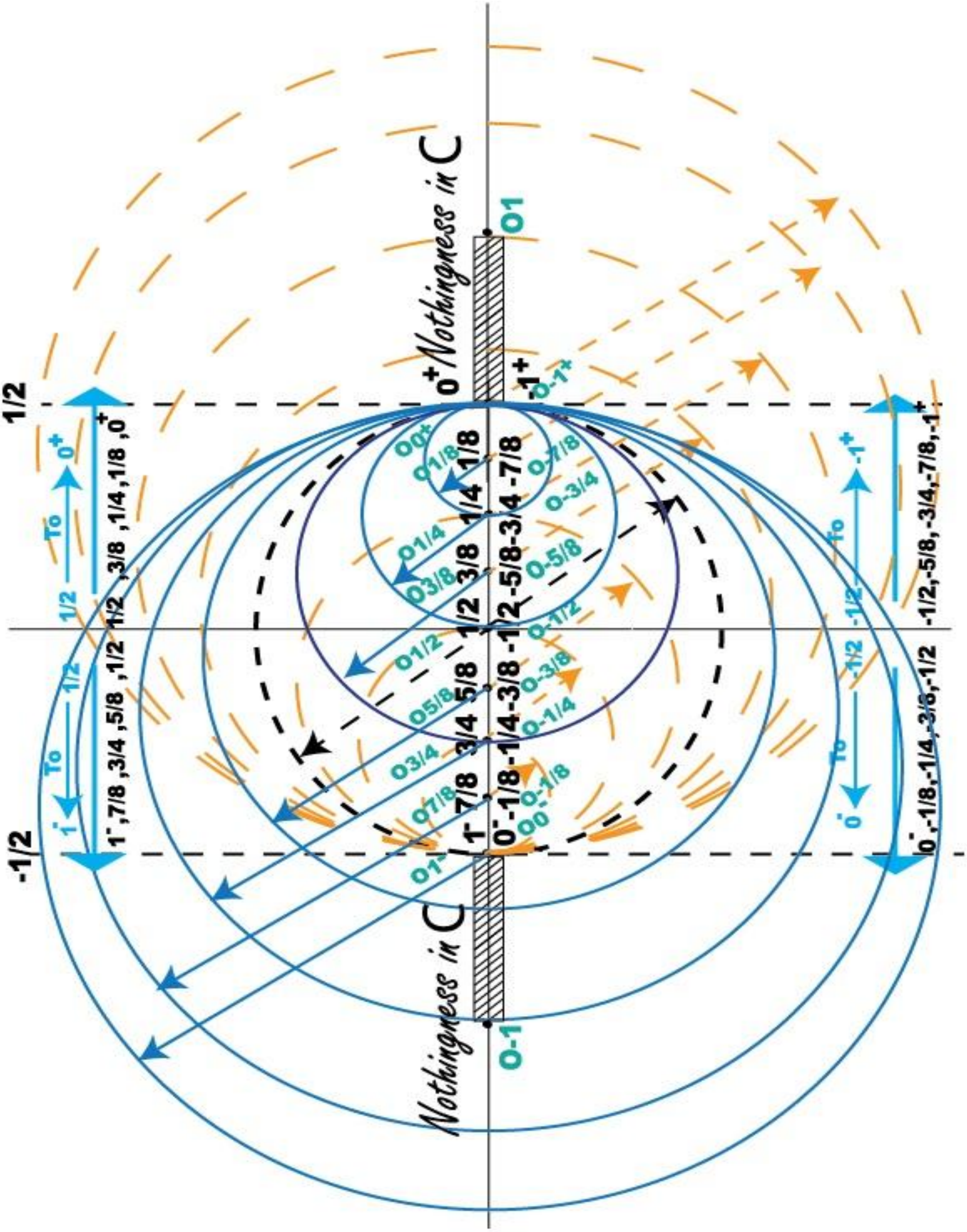
Representation of real number that belong to [0 , 1/2] U]1/2 , 1[in a complex plane :



Representation of real numbers that belong to [-1 , -1/2] U]-1/2 , 0[in a complex plane :

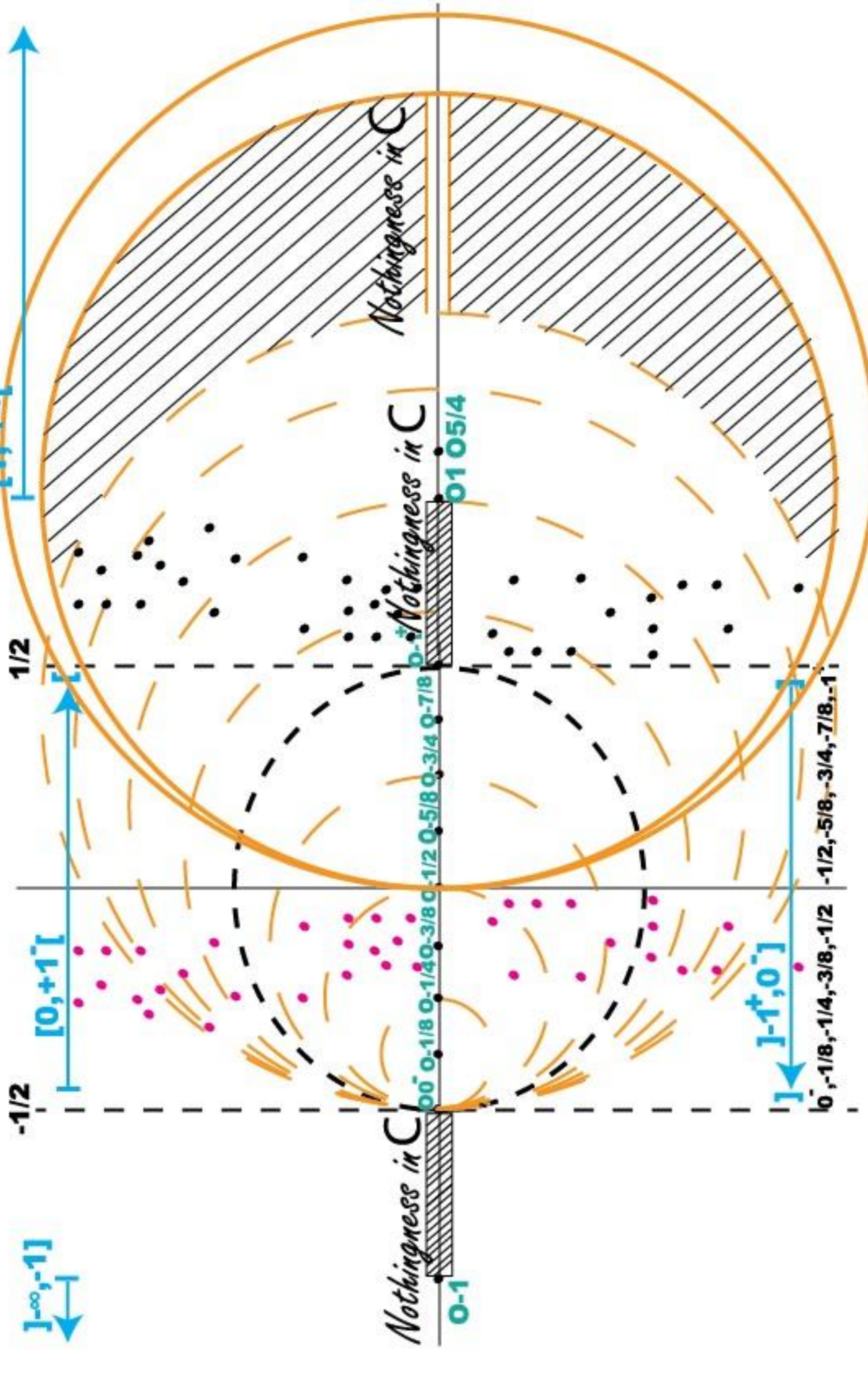


Representation of real numbers that belong to] -1 , -1 [in a complex plane :

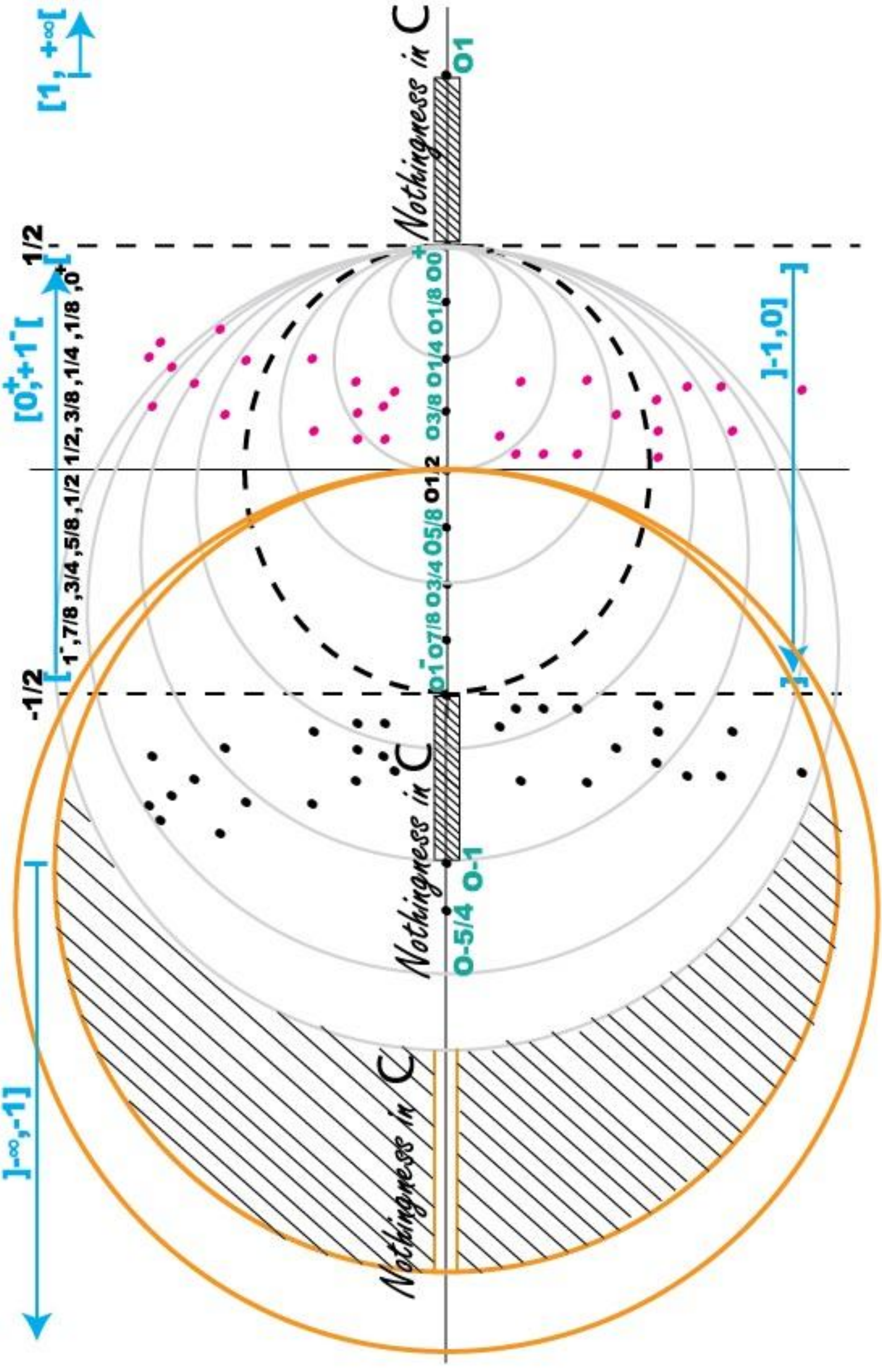


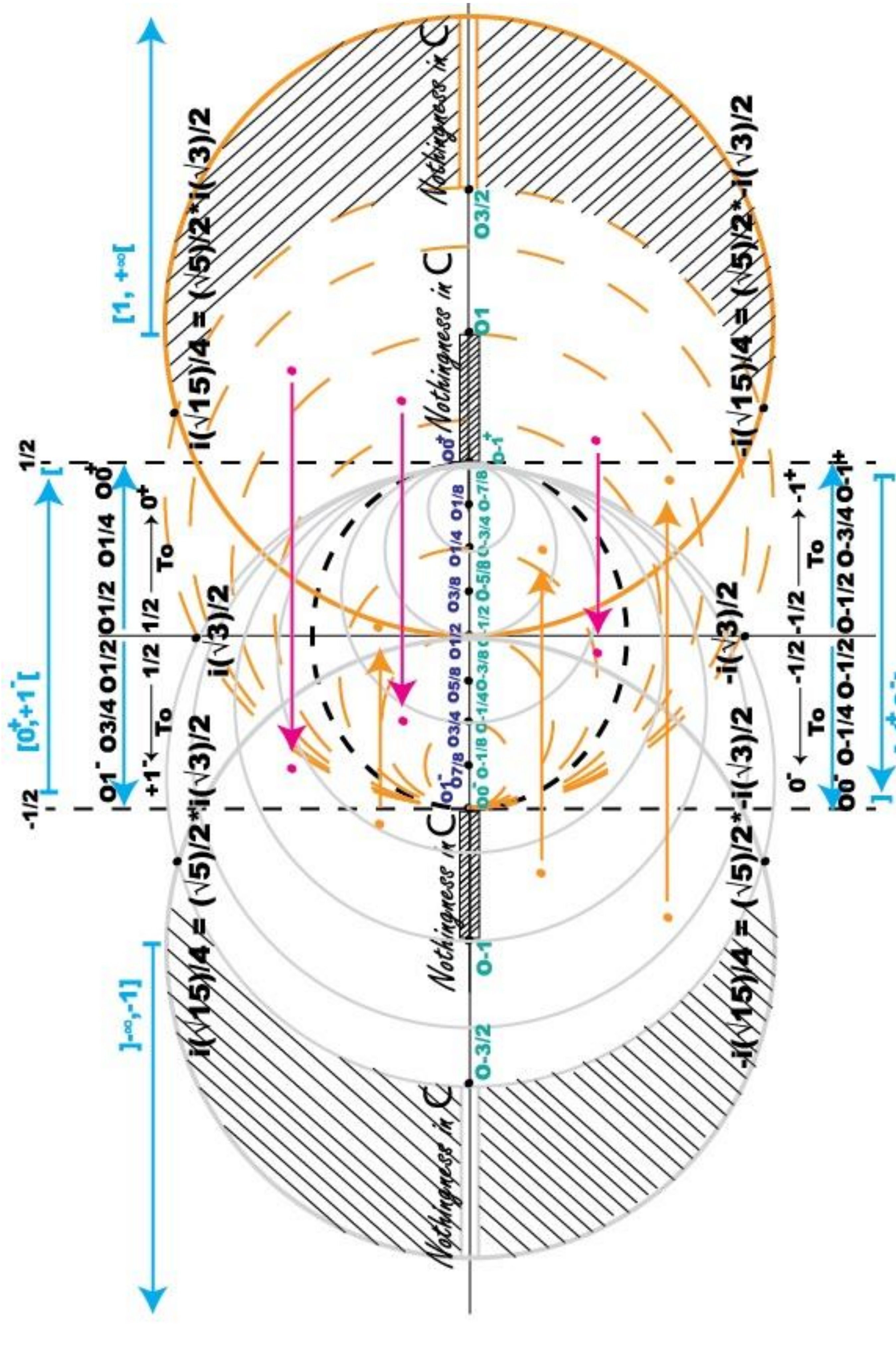
Conclusion:

We observe that in the limit interval [-1/2 , 1/2] the real numbers overlap and intersect , and just beyond this interval there are emptiness

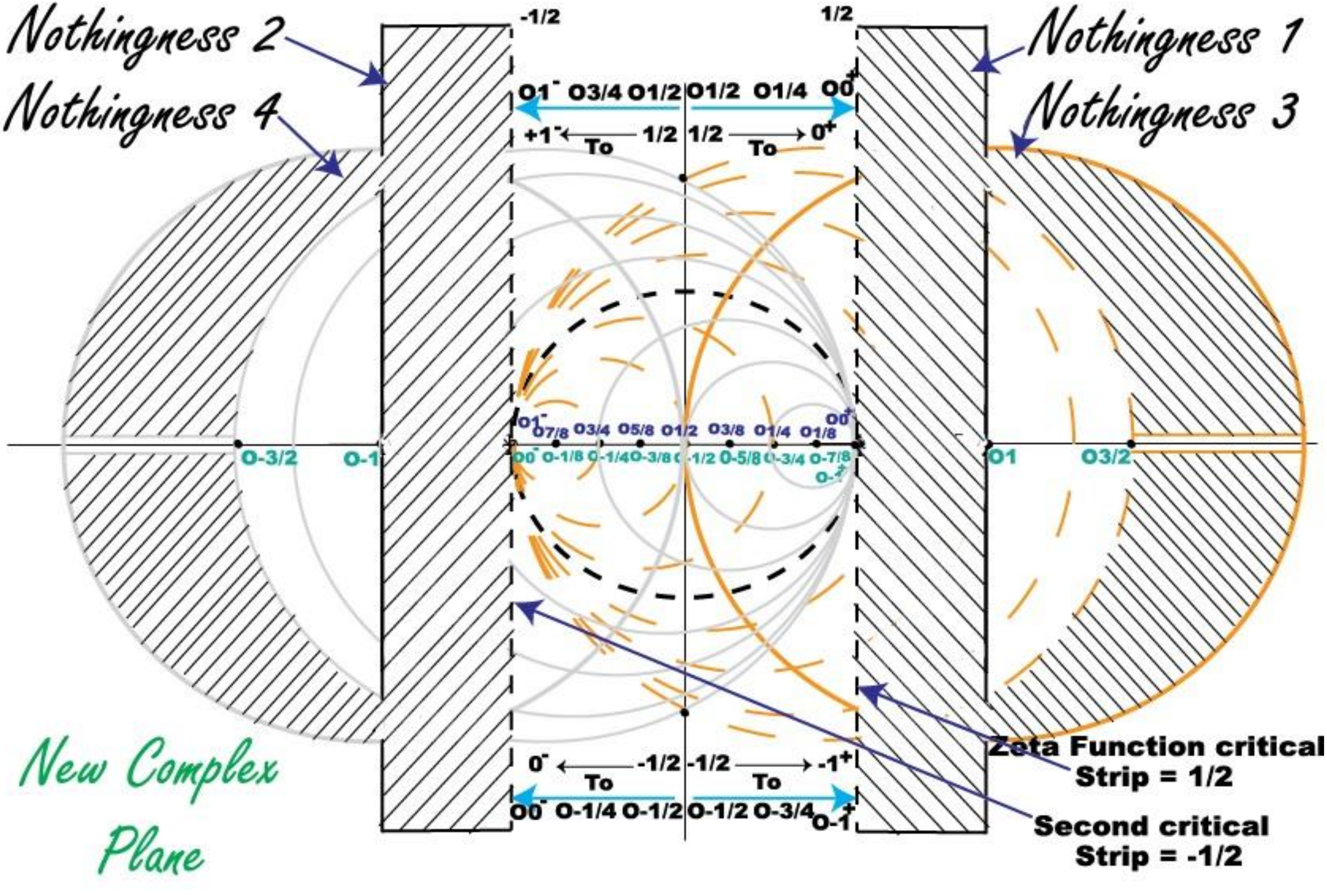


[1, +∞[
Nothingness in C
Nothingness in C
Nothingness in C
Nothingness in C
1/2
-1/2
[0,+1⁻[
]-1⁺,0⁻]
]-∞,-1]
O1 O5/4
O-1
O0⁻ O-1/8 O-1/4 O-3/8 O-1/2 O-5/8 O-3/4 O-7/8 O-1⁺
0⁻,-1/8,-1/4,-3/8,-1/2
-1/2,-5/8,-3/4,-7/8,-1


[1, +∞[
Nothingness in C
O1
1/2
-1/2
[0+,+1-[
1-,7/8,3/4,5/8,1/2 1/2,3/8,1/4,1/8,0+
O0+ O1/8 O1/4 O3/8 O1/2 O5/8 O3/4 O7/8 O1-
]-1,0]
Nothingness in C
O-1
O-5/4
]-∞,-1]
Nothingness in C



i(√15)/4 = (√5)/2*i(√3)/2
-i(√15)/4 = (√5)/2*-i(√3)/2
Nothingness in ℂ
[1, +∞[
]-∞,-1]
[0+,+1-[
]-1+,0-]
i(√3)/2
-i(√3)/2
O3/2
O1
O-1
O-3/2
1/2
-1/2
O1- O3/4 O1/2 O1/2 O1/4 O0+
O0- O-1/4 O-1/2 O-1/2 O-3/4 O-1+
+1- ← To — 1/2 1/2 — To → 0+
0- ← To — -1/2 -1/2 — To → -1+
O7/8 O3/4 O5/8 O1/2 O3/8 O1/4 O1/8
O-1/8 O-1/4 O-3/8 O-1/2 O-5/8 O-3/4 O-7/8


Nothingness 1
Nothingness 2
Nothingness 3
Nothingness 4
-1/2
1/2
O1⁻ O3/4 O1/2 O1/2 O1/4 O0⁺
+1⁻ To 1/2 1/2 To 0⁺
O7/8 O3/4 O5/8 O1/2 O3/8 O1/4 O1/8 O0⁺
O0⁻ O-1/8 O-1/4 O-3/8 O-1/2 O-5/8 O-3/4 O-7/8
O-3/2
O-1
O1
O3/2
0⁻ To -1/2 -1/2 To -1⁺
O0⁻ O-1/4 O-1/2 O-1/2 O-3/4 O-1⁺
Zeta Function critical
Strip = 1/2
Second critical
Strip = -1/2
New Complex
Plane

In the **new complex plane**, especially in the interval **[1, +∞[**

Any real number belongs to this interval : $\forall$ **X** $\in$ **[1, +∞[** can be written like : **S = a + ib** , hence **S** is a complex number that represents a real number **X** and belongs to the circumference that its radius is **X** and **Re(S) = a** and **a** $\notin$ **]1/2 , 1[**

Because of **Nothingness 1,** so then the points that are supposed to be in **Nothingness 1** space or interval, now they exist in the interval that is limited by both: **Second Critical Strip** which is equal to – 1/2 and limited by **Zeta function Critical Strip** which is equal to 1/2 , and all these points exist exactly in the interval **] 1/2 , + 1$^-$ [** that means $\xleftarrow{\textbf{+1}^- \quad \textbf{to} \quad \textbf{1/2}}$.

In the same **new complex plane**, especially in the interval **] -∞ , -1]**

Any real number belongs to this interval : $\forall$ **X′** $\in$ **] -∞ , -1]** can be written like : **S′ = a′ + ib′** , hence **S′** is a complex number that represents a real number **X′** and belongs to the circumference that its radius is **X′** and

Re(S′) = a′ and **a′** $\notin$ **] -1 , -1/2 [**

Because of **Nothingness 2,** so then the points that are supposed to be in **Nothingness 2** space or interval, now they exist in the interval that is limited by both: **Second Critical Strip** which is equal to – 1/2 and limited by **Zeta function Critical Strip** which is equal to 1/2 , and all these points exist exactly in the interval **] -1$^+$, - 1/2 [** that means $\xrightarrow{\textbf{-1/2} \quad \textbf{to} \quad \textbf{-1}^+}$

Notice:

Inside this limited interval **[-1/2 , 1/2]** , any point in the complex plane that belongs to this interval has 2 abscissa values : positive abscissa value and negative abscissa value

Example:

Let us take a point inside this limited interval **[-1/2 , 1/2]** ,hence **S = 5/8 + ib** . we will find that this point has 2 abscissa values $\mathbf{X_S = 5/8}$ and $\mathbf{X_S = -3/8}$ therefore **S = 5/8 + ib** and **S = -3/8 + ib**

As a conclusion, and thanks to the **notion 4** and **New complex Plane**, we arrive to get a complex plane with new notions, this new complex plane looks like a **Black hole**, and we arrive to open new door that has never been opened before and this can help to understand the universe and mathematics and all sciences and resolve complicated problems , and to understand many other phenomenon in different areas especially in Quantum physic .

** Formula 10 :(suite of General Formulas 1)

3 is a prime number, let 3 be the base of this following infinite series:

3+9+27+81+243+729+…………………

If we consider 3 as the base of this infinite series, we will get:

$3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots$ by $\sum_{n=1}^{\infty}(3)^n$

Then $3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = \sum_{n=1}^{\infty}(3)^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(3)^n$

we have: $\sum_{n=1}^{\infty}(3)^n = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

*3 we are going to multiply 3 by $\sum_{n=1}^{\infty}(3)^n$ and we get as a result this :

$3.\sum_{n=1}^{\infty}(3)^n = 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

We have: $\sum_{n=1}^{\infty}(3)^n - 3 = 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}(3)^n - 3$ its value and we get as a result this :

1= $3.\sum_{n=1}^{\infty}(3)^n = \sum_{n=1}^{\infty}(3)^n - 3$

1 $\Longleftrightarrow 3.\sum_{n=1}^{\infty}(3)^n - \sum_{n=1}^{\infty}(3)^n = -3$

1 $\Longleftrightarrow 2.\sum_{n=1}^{\infty}(3)^n = -3$

1 $\Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}(3)^n = -3/2}$ and this formula is **Formula 10**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(3)^n$ by 3 until the infinity?

we multiply 3 by $\sum_{n=1}^{\infty}(3)^n$ and we get as a result this :

$3.\sum_{n=1}^{\infty}(3)^n = 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

Then $3.\sum_{n=1}^{\infty}(3)^n = \sum_{n=1}^{\infty}(3)^n - 3^1$

We are going to multiply again the result by 3 and we get this :

$\boxed{2 =}$ $3.(3.\sum_{n=1}^{\infty}(3)^n = 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots)$

2 $\Longleftrightarrow 3.3.\sum_{n=1}^{\infty}(3)^n = 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 3.3.\sum_{n=1}^{\infty}(3)^n = \sum_{n=1}^{\infty}(3)^n - 3^1 - 3^2$

We continue repeating multiplying the result by 3 and we get this :

$$2 \Longleftrightarrow \quad 3.(3.3.\sum_{n=1}^{\infty}(3)^n = 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \quad 3.3.3.\sum_{n=1}^{\infty}(3)^n = 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 3.3.3.\sum_{n=1}^{\infty}(3)^n = \sum_{n=1}^{\infty}(3)^n - 3^1 - 3^2 - 3^3$

As a result $2 \Longleftrightarrow 3.3.3.\sum_{n=1}^{\infty}(3)^n = \sum_{n=1}^{\infty}(3)^n - (3^1 + 3^2 + 3^3)$

We continue to repeat multiplying the result by 3 until the infinity and we get

$$*3*3*3*\ldots..\sum_{n=1}^{\infty}(3)^n = \sum_{n=1}^{\infty}(3)^n - (3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots)$$

we have $\sum_{n=1}^{\infty}(3)^n = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}(3)^n$ and we get this :

$$2 \Longleftrightarrow \quad 3*3*3*\ldots..\sum_{n=1}^{\infty}(3)^n = \sum_{n=1}^{\infty}(3)^n - \sum_{n=1}^{\infty}(3)^n$$

As a result we get :

$$2 \Longleftrightarrow 3*3*3*\ldots..\sum_{n=1}^{\infty}(3)^n = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}(3)^n = -3/2$

Therefore: **3*3*3*... = 0**

Using **Theorem and notion 1** that states if we multiply a number 3 by itself until the infinity, we get 0 zero as a result.

** Formula 11:

We have: $\sum_{n=1}^{\infty}(3)^n = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(3)^n$ by 1/3 until the infinity?</u>

we have: $\sum_{n=1}^{\infty}(3)^n = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$

*1/3 we are going to multiply $1/3$ by $\sum_{n=1}^{\infty}(3)^n$ and we get as a result this :

$$3= \quad 1/3.\sum_{n=1}^{\infty}(3)^n = 1+ (3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/3.\sum_{n=1}^{\infty}(3)^n - 1 = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + \ldots\ldots\ldots\ldots\ldots$$

We continue repeating multiplying the result by 1/3 and we get this :

$3 \Longleftrightarrow 1/3*(1/3.\sum_{n=1}^{\infty}(3)^n - 1 = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + ...)$

$3 \Longleftrightarrow 1/3*1/3.\sum_{n=1}^{\infty}(3)^n - 1/3^1 = 1+(3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + ...)$

$3 \Longleftrightarrow 1/3*1/3.\sum_{n=1}^{\infty}(3)^n - 1/3^1 - 1 = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + ...$

We continue repeating multiplying the result by 1/3 and we get this :

$3 \Longleftrightarrow 1/3*(1/3*1/3.\sum_{n=1}^{\infty}(3)^n - 1/3^1 - 1 = 3^1 + 3^2 + 3^3 + 3^4 + 3^5 + 3^6 + 3^7 + ...)$

$3 \Longleftrightarrow 1/3*1/3*1/3.\sum_{n=1}^{\infty}(3)^n - 1/3^2 - 1/3^1 = 1+(3^1 + 3^2+ 3^3+ 3^4+ 3^5+ 3^6+ 3^7 + ...)$

We continue to repeat multiplying the result by 1/3 until the infinity and we get

$3 \Longleftrightarrow 1/3*1/3*1/3*....\sum_{n=1}^{\infty}(3)^n - (1/3^1+1/3^2 +1/3^3 +1/3^4 +1/3^5 +...)= 1+(3^1+3^2+3^3+3^4+3^5+3^6+3^7+ ...)$

We have: $1/3*1/3*1/3*....\sum_{n=1}^{\infty}(3)^n = 0$

We are going to prove this result later on

Then the result will be:

$3 \Longleftrightarrow - (1/3^1+1/3^2+1/3^3+1/3^4+1/3^5 +1/3^6+ 1/3^7...)= 1+(3^1+3^2+3^3+3^4+3^5+3^6+3^7+ ...)$

$3 \Longleftrightarrow (3^1+3^2+3^3+3^4+3^5+3^6+3^7+ ...) +1+(1/3^1+1/3^2+1/3^3+1/3^4+1/3^5 +1/3^6+ 1/3^7...)= 0$

$3 \Longleftrightarrow (1/3^{-1}+1/3^{-2}+1/3^{-3}+1/3^{-4}+1/3^{-5}+1/3^{-6}+1/3^{-7}+ ...)+1/3^0+(1/3^1+1/3^2+1/3^3+1/3^4+1/3^5+1/3^6+1/3^7...)= 0$

Let $\sum_{n=1}^{+\infty} 1/3^n = 1/3^1+1/3^2+1/3^3+1/3^4+1/3^5+1/3^6+1/3^7 +..........$

And let $\sum_{n=-1}^{-\infty} 1/3^n = 1/3^{-1}+1/3^{-2}+1/3^{-3}+1/3^{-4}+1/3^{-5}+1/3^{-6}+1/3^{-7} +..........$

Then the result will be:

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 1/3^n + 1/3^0 + \sum_{n=1}^{+\infty} 1/3^n = 0$

$3 \Longleftrightarrow \sum_{n\in Z} 1/3^n = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 12 :

3 is a prime number, let 3 be the base of this following infinite series:

1/3 + 1/9 + 1/27 + 1/81 + 1/243 + 1/729 +…………………

If we consider 3 as the base of this infinite series, we will get:

$1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots$ by $\sum_{n=1}^{\infty}\overline{(3)^{n}}$

Then $1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = \sum_{n=1}^{\infty}\overline{(3)^{n}}$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{(3)^{n}}$

we have: $\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots$

*1/3 we are going to multiply $1/3$ by $\sum_{n=1}^{\infty}\overline{(3)^{n}}$ and we get as a result this :

$$1/3.\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots\ldots$$

We have: $\sum_{n=1}^{\infty}\overline{(3)^{n}} - 1/3 = 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}\overline{(3)^{n}} - 1/3$ its value and we get as a result this :

$$1= \quad 1/3.\sum_{n=1}^{\infty}\overline{(3)^{n}} = \sum_{n=1}^{\infty}\overline{(3)^{n}} - 1/3$$

$$1 \Longleftrightarrow 1/3.\sum_{n=1}^{\infty}\overline{(3)^{n}} - \sum_{n=1}^{\infty}\overline{(3)^{n}} = -1/3$$

$$1 \Longleftrightarrow (1/3 - 1).\sum_{n=1}^{\infty}\overline{(3)^{n}} = -1/3$$

$$1 \Longleftrightarrow (\,(1\text{-}3)/3\,).\sum_{n=1}^{\infty}\overline{(3)^{n}} = -1/3$$

$$1 \Longleftrightarrow (\,(3\text{-}1)/3\,).\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/3$$

$$1 \Longleftrightarrow (2/3).\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/3$$

$$1 \Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/2}$$ and this formula is **Formula 12**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(3)^{n}}$ by 1/3 until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots$

we multiply 1/3 by $\sum_{n=1}^{\infty}\overline{(3)^{n}}$ and we get as a result this :

$$1/3.\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots\ldots$$

Then $1/3.\sum_{n=1}^{\infty}\overline{(3)^{n}} = \sum_{n=1}^{\infty}(3)^{n} - 1/3^1$

We are going to multiply again the result by 1/3 and we get this :

$$\boxed{2 =} \quad 1/3.(1/3.\sum_{n=1}^{\infty}\overline{(3)^{n}} = 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/3*1/3.\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \dots\dots\dots\dots$$

Then we get $2 \Longleftrightarrow 1/3*1/3.\sum_{n=1}^{\infty}\overline{(3)}^{n} = \sum_{n=1}^{\infty}\overline{(3)}^{n} - 1/3^1 - 1/3^2$

We continue repeating multiplying the result by 1/3 and we get this :

$$2 \Longleftrightarrow 1/3*(1/3*1/3.\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \dots\dots)$$

$$2 \Longleftrightarrow 1/3*1/3*1/3.\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \dots\dots\dots\dots$$

Then we get $2 \Longleftrightarrow 1/3*1/3*1/3.\sum_{n=1}^{\infty}\overline{(3)}^{n} = \sum_{n=1}^{\infty}\overline{(3)}^{n} - 1/3^1 - 1/3^2 - 1/3^3$

As a result $2 \Longleftrightarrow 1/3*1/3*1/3.\sum_{n=1}^{\infty}\overline{(3)}^{n} = \sum_{n=1}^{\infty}\overline{(3)}^{n} - (1/3^1 + 1/3^2 + 1/3^3)$

We continue to repeat multiplying the result by 1/3 until the infinity and we get

$$*1/3*1/3*1/3*\dots\sum_{n=1}^{\infty}\overline{(3)}^{n} = \sum_{n=1}^{\infty}\overline{(3)}^{n} -(1/3^1+1/3^2+1/3^3+1/3^4+1/3^5+1/3^6+1/3^7 +\dots)$$

we have $\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \dots\dots\dots\dots$

we replace the right side of the result by $\sum_{n=1}^{\infty}\overline{(3)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/3*1/3*1/3*\dots\dots\sum_{n=1}^{\infty}\overline{(3)}^{n} = \sum_{n=1}^{\infty}\overline{(3)}^{n} - \sum_{n=1}^{\infty}\overline{(3)}^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/3*1/3*1/3*\dots\dots\sum_{n=1}^{\infty}\overline{(3)}^{n} = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/2$

Therefore: **$1/3*1/3*1/3*\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots = 0$**

Using **Theorem and notion 1 of Zero** that states if we multiply a number 1/3 by itself until the infinity, we get 0 zero as a result.

** Formula 13 :

We have: $\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \dots\dots\dots\dots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(3)}^{n}$ by 3 until the infinity?</u>

we have: $\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \dots\dots\dots\dots$

*3 we are going to multiply 3 by $\sum_{n=1}^{\infty}\overline{(3)}^{n}$ and we get as a result this :

$$3= 3.\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1+ (1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 +\dots.)$$

$3 \Longleftrightarrow 3.\sum_{n=1}^{\infty}\overline{(3)}^n - 1 = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 3 and we get this :

$3 \Longleftrightarrow 3*(3.\sum_{n=1}^{\infty}\overline{(3)}^n - 1 = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots)$

$3 \Longleftrightarrow 3*3.\sum_{n=1}^{\infty}\overline{(3)}^n - 3^1 = 1+(1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 +\ldots\ldots)$

$3 \Longleftrightarrow 3*3.\sum_{n=1}^{\infty}\overline{(3)}^n - 3^1 - 1 = 1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots$

We continue repeating multiplying the result by 3 and we get this :

$3 \Longleftrightarrow 3*(3*3.\sum_{n=1}^{\infty}\overline{(3)}^n - 3^1 - 1= 1/3^1 +1/3^2 +1/3^3 +1/3^4 +1/3^5 +1/3^6 +1/3^7 + \ldots\ldots)$

$3 \Longleftrightarrow 3*3*3.\sum_{n=1}^{\infty}\overline{(3)}^n - 3^2 - 3^1 = 1+(1/3^1 +1/3^2+1/3^3+1/3^4+1/3^5+1/3^6+1/3^7 + \ldots\ldots)$

We continue to repeat multiplying the result by 3 until the infinity and we get :

$3 \Longleftrightarrow 3*3*3*\ldots.\sum_{n=1}^{\infty}\overline{(3)}^n - (3^1+3^2 +3^3 +3^4 +3^5 +\ldots)= 1+(1/3^1+1/3^2+1/3^3+1/3^4+1/3^5+1/3^6+1/3^7+ \ldots)$

We have: $3*3*3*\ldots.\sum_{n=1}^{\infty}\overline{(3)}^n = 0$

Then the result will be:

$3 \Longleftrightarrow -(3^1+3^2+3^3+3^4+3^5+3^6+3^7+ \ldots) =1+(1/3^1+1/3^2+1/3^3+1/3^4+1/3^5 +1/3^6+ 1/3^7\ldots)$

$3 \Longleftrightarrow (1/3^1+1/3^2+1/3^3+1/3^4+1/3^5 +1/3^6+ 1/3^7\ldots)+1(3^1+3^2+3^3+3^4+3^5+3^6+3^7+ \ldots) = 0$

$3 \Longleftrightarrow (3^{-1}+3^{-2}+3^{-3}+3^{-4}+3^{-5}+3^{-6}+3^{-7}+ \ldots) + 3^0+ (3^1+3^2+3^3+3^4+3^5+3^6+3^7\ldots)= 0$

Let $\sum_{n=1}^{+\infty} 3^n = 3^1+3^2+3^3+3^4+3^5+3^6+3^7+\ldots\ldots\ldots$

And let $\sum_{n=-1}^{-\infty} 3^n = 3^{-1}+3^{-2}+3^{-3}+3^{-4}+3^{-5}+3^{-6}+3^{-7}+\ldots\ldots.$

Then the result will be:

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 3^n + 3^0 + \sum_{n=1}^{+\infty} 3^n = 0$

$3 \Longleftrightarrow \sum_{n\in Z} 3^n = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 11 and Formula 13:

Since Formula 11 is equal to : $\sum_{n=-1}^{-\infty} 1/3^n + 1/3^0 + \sum_{n=1}^{+\infty} 1/3^n = 0$

And Formula 13 is equal to : $\sum_{n=-1}^{-\infty} 3^n + 3^0 + \sum_{n=1}^{+\infty} 3^n = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/3^n + 1/3^0 + \sum_{n=1}^{+\infty} 1/3^n = \sum_{n=-1}^{-\infty} 3^n + 3^0 + \sum_{n=1}^{+\infty} 3^n = 0$

$$\boldsymbol{\sum_{n\in Z} 1/3^n = \sum_{n\in Z} 3^n = 0}$$

** Formula 14:

7 is a prime number, let 7 be the base of this following infinite series:

7 + 49 + 343 + 2401 + 9604 + 67228 +......................

If we consider 7 as the base of this infinite series, we will get:

$7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots$

Let us denote this previous infinite series $7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots$ by $\sum_{n=1}^{\infty}(7)^n$

Then $7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots = \sum_{n=1}^{\infty}(7)^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(7)^n$

we have: $\sum_{n=1}^{\infty}(7)^n = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots$

*7 we are going to multiply 7 by $\sum_{n=1}^{\infty}(7)^n$ and we get as a result this :

$7.\sum_{n=1}^{\infty}(7)^n = 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots$

We have: $\sum_{n=1}^{\infty}(7)^n - 7 = 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}(7)^n - 7$ its value and we get as a result this :

1= $7.\sum_{n=1}^{\infty}(7)^n = \sum_{n=1}^{\infty}(7)^n - 7$

1 $\Longleftrightarrow 7.\sum_{n=1}^{\infty}(7)^n - \sum_{n=1}^{\infty}(7)^n = -7$

1 $\Longleftrightarrow 6.\sum_{n=1}^{\infty}(7)^n = -7$

1 $\Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}(7)^n = -7/6}$ and this formula is **Formula 14**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(7)^n$ by 7 until the infinity?</u>

we multiply 7 by $\sum_{n=1}^{\infty}(7)^n$ and we get as a result this :

$7.\sum_{n=1}^{\infty}(7)^n = 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots$

Then $7.\sum_{n=1}^{\infty}(7)^n = \sum_{n=1}^{\infty}(7)^n - 7^1$

We are going to multiply again the result by 7 and we get this :

$\boxed{2 =}$ $7.(7.\sum_{n=1}^{\infty}(7)^n = 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots)$

$2 \Longleftrightarrow 7.7.\sum_{n=1}^{\infty}(7)^n = 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 7.7.\sum_{n=1}^{\infty}(7)^n = \sum_{n=1}^{\infty}(7)^n - 7^1 - 7^2$

We continue repeating multiplying the result by 7 and we get this :

$2 \Longleftrightarrow 7.(7.7.\sum_{n=1}^{\infty}(7)^n = 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots)$

$2 \Longleftrightarrow 7.7.7.\sum_{n=1}^{\infty}(7)^n = 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 7.7.7.\sum_{n=1}^{\infty}(7)^n = \sum_{n=1}^{\infty}(7)^n - 7^1 - 7^2 - 7^3$

As a result $2 \Longleftrightarrow 7.7.7.\sum_{n=1}^{\infty}(7)^n = \sum_{n=1}^{\infty}(7)^n - (7^1 + 7^2 + 7^3)$

We continue to repeat multiplying the result by 7 until the infinity and we get :

$7*7*7*\ldots\ldots\sum_{n=1}^{\infty}(7)^n = \sum_{n=1}^{\infty}(7)^n - (7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots)$

we have $\sum_{n=1}^{\infty}(7)^n = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}(7)^n$ and we get this :

$2 \Longleftrightarrow 7*7*7*\ldots\ldots\sum_{n=1}^{\infty}(7)^n = \sum_{n=1}^{\infty}(7)^n - \sum_{n=1}^{\infty}(7)^n$

As a result we get :

$2 \Longleftrightarrow 7*7*7*\ldots\ldots\sum_{n=1}^{\infty}(7)^n = 0$

We have as a previous result: $\sum_{n=1}^{\infty}(7)^n = -7/6$

Therefore: **$7*7*7*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$**

Using **Theorem and notion 1 of Zero** that states if we multiply a number 7 by itself until the infinity, we get 0 zero as a result.

** Formula 15:

We have: $\sum_{n=1}^{\infty}(7)^n = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(7)^n$ by 1/7 until the infinity?

we have: $\sum_{n=1}^{\infty}(7)^n = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots$

*1/7 we are going to multiply 1/7 by $\sum_{n=1}^{\infty}(7)^n$ and we get as a result this :

3= $1/7.\sum_{n=1}^{\infty}(7)^n = 1+ (7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots)$

3 $\Longleftrightarrow 1/7.\sum_{n=1}^{\infty}(7)^n - 1 = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 +\ldots\ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/7 and we get this :

3 $\Longleftrightarrow 1/7*(1/7.\sum_{n=1}^{\infty}(7)^n - 1 = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 +\ldots\ldots\ldots\ldots\ldots)$

3 $\Longleftrightarrow 1/7*1/7.\sum_{n=1}^{\infty}(7)^n - 1/7^1 = 1+(7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 + \ldots\ldots\ldots\ldots\ldots)$

3 $\Longleftrightarrow 1/7*1/7.\sum_{n=1}^{\infty}(7)^n - 1/7^1 - 1 = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 +\ldots\ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/7 and we get this :

3 $\Longleftrightarrow 1/7*(1/7*1/7.\sum_{n=1}^{\infty}(7)^n - 1/7^1 - 1 = 7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 +\ldots\ldots)$

3 $\Longleftrightarrow 1/7*1/7*1/7.\sum_{n=1}^{\infty}(7)^n - 1/7^2 - 1/7^1 = 1+(7^1 + 7^2 + 7^3 + 7^4 + 7^5 + 7^6 + 7^7 +\ldots)$

We continue to repeat multiplying the result by 1/7 until the infinity and we get

3$\Longleftrightarrow 1/7*1/7*1/7*\ldots.\sum_{n=1}^{\infty}(7)^n - (1/7^1+1/7^2 +1/7^3 +1/7^4 +1/7^5 +\ldots)= 1+(7^1+7^2+7^3+7^4+7^5+7^6+7^7+ \ldots)$

We have: $1/7*1/7*1/7*\ldots.\sum_{n=1}^{\infty}(7)^n = 0$

We are going to prove this result later on

Then the result will be:

3 $\Longleftrightarrow - (1/7^1+1/7^2+1/7^3+1/7^4+1/7^5 +1/7^6+ 1/7^7+\ldots)=1+(7^1+7^2+7^3+7^4+7^5+7^6+7^7+ \ldots)$

3 $\Longleftrightarrow (7^1+7^2+7^3+7^4+7^5+7^6+7^7+\ldots)+1+(1/7^1+1/7^2+1/7^3+1/7^4+1/7^5 +1/7^6+ 1/7^7+\ldots)= 0$

3$\Longleftrightarrow (1/7^{-1}+1/7^{-2}+1/7^{-3}+1/7^{-4}+1/7^{-5}+1/7^{-6}+1/7^{-7}+ \ldots)+1/7^0+(1/7^1+1/7^2+1/7^3+1/7^4+1/7^5+1/7^6+1/7^7\ldots)= 0$

Let $\sum_{n=1}^{+\infty} 1/7^n = 1/7^1+1/7^2+1/7^3+1/7^4+1/7^5 +1/7^6+ 1/7^7+\ldots$

And let $\sum_{n=-1}^{-\infty} 1/7^n = 1/7^{-1}+1/7^{-2}+1/7^{-3}+1/7^{-4}+1/7^{-5}+1/7^{-6}+1/7^{-7} +\ldots\ldots\ldots\ldots$

Then the result will be:

3 $\Longleftrightarrow \sum_{n=-1}^{-\infty} 1/7^n + 1/7^0 + \sum_{n=1}^{+\infty} 1/7^n = 0$

$3 \Longleftrightarrow \quad \sum_{n \in Z} 1/7^n = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 16:

7 is a prime number, let 7 be the base of this following infinite series:

1/7 + 1/49 + 1/343 + 1/2401 + 1/9604 + 1/67228 +.....................

If we consider 7 as the base of this infinite series, we will get:

$1/7 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + ...$

Let us denote this previous infinite series $1/7 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + ...$ by $\sum_{n=1}^{\infty} \overline{(7)^n}$

Then $1/7 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + ... = \sum_{n=1}^{\infty} \overline{(7)^n}$

Now , let us calculate the sum of $\sum_{n=1}^{\infty} \overline{(7)^n}$

we have: $\sum_{n=1}^{\infty} \overline{(7)^n} = 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + ...$

*1/7 we are going to multiply $1/7$ by $\sum_{n=1}^{\infty} \overline{(7)^n}$ and we get as a result this :

$1/7.\sum_{n=1}^{\infty} \overline{(7)^n} = 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + ...$

We have: $\sum_{n=1}^{\infty} \overline{(7)^n} - 1/7 = 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + ...$

Let us replace $\sum_{n=1}^{\infty} \overline{(7)^n} - 1/7$ its value and we get as a result this :

$1= \quad 1/7.\sum_{n=1}^{\infty} \overline{(7)^n} = \sum_{n=1}^{\infty} \overline{(7)^n} - 1/7$

$1 \Longleftrightarrow 1/7.\sum_{n=1}^{\infty} \overline{(7)^n} - \sum_{n=1}^{\infty} \overline{(7)^n} = -1/7$

$1 \Longleftrightarrow (1/7 - 1).\sum_{n=1}^{\infty} \overline{(7)^n} = -1/7$

$1 \Longleftrightarrow ((1\text{-}7)/7).\sum_{n=1}^{\infty} \overline{(7)^n} = -1/7$

$1 \Longleftrightarrow ((7\text{-}1)/7).\sum_{n=1}^{\infty} \overline{(7)^n} = 1/7$

$1 \Longleftrightarrow (6/7).\sum_{n=1}^{\infty} \overline{(7)^n} = 1/7$

$1 \Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty} \overline{(7)^n} = 1/6}$ and this formula is **Formula 16**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(7)}^{n}$ by 1/7 until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots\ldots$

we multiply 1/7 by $\sum_{n=1}^{\infty}\overline{(7)}^{n}$ and we get as a result this :

$$1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots\ldots$$

Then $1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = \sum_{n=1}^{\infty}\overline{(7)}^{n} - 1/7^1$

We are going to multiply again the result by 1/7 and we get this :

$$\boxed{2 =}\ 1/7.(1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/7*1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/7*1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = \sum_{n=1}^{\infty}\overline{(7)}^{n} - 1/7^1 - 1/7^2$

We continue repeating multiplying the result by 1/7 and we get this :

$$2 \Longleftrightarrow 1/7*(1/7*1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/7*1/7*1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/7*1/7*1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = \sum_{n=1}^{\infty}\overline{(7)}^{n} - 1/7^1 - 1/7^2 - 1/7^3$

As a result $2 \Longleftrightarrow 1/7*1/7*1/7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = \sum_{n=1}^{\infty}\overline{(7)}^{n} - (1/7^1 + 1/7^2 + 1/7^3)$

We continue to repeat multiplying the result by 1/7 until the infinity and we get

$$*1/7*1/7*1/7*\ldots\sum_{n=1}^{\infty}\overline{(7)}^{n} = \sum_{n=1}^{\infty}\overline{(7)}^{n} - (1/7^1+1/7^2+1/7^3+1/7^4+1/7^5+1/7^6+1/7^7+\ldots)$$

we have $\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^1+1/7^2+1/7^3+1/7^4+1/7^5+1/7^6+1/7^7+\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}\overline{(7)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/7*1/7*1/7*\ldots\ldots\sum_{n=1}^{\infty}\overline{(7)}^{n} = \sum_{n=1}^{\infty}\overline{(7)}^{n} - \sum_{n=1}^{\infty}\overline{(7)}^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/7*1/7*1/7*\ldots\ldots\sum_{n=1}^{\infty}\overline{(7)}^{n} = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/6$

Therefore: $\mathbf{1/7*1/7*1/7*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number 1/7 by itself until the infinity, we get 0 zero as a result.

** Formula 17:

We have: $\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(7)}^{n}$ by 7 until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots\ldots$

*7 we are going to multiply 7 by $\sum_{n=1}^{\infty}\overline{(7)}^{n}$ and we get as a result this :

3= $7.\sum_{n=1}^{\infty}\overline{(7)}^{n} = 1+ (1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 +\ldots)$

3 $\Longleftrightarrow$ $7.\sum_{n=1}^{\infty}\overline{(7)}^{n} - 1 = 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 7 and we get this :

3 $\Longleftrightarrow$ $7*(7.\sum_{n=1}^{\infty}\overline{(7)}^{n} - 1 = 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots\ldots)$

3 $\Longleftrightarrow$ $7*7.\sum_{n=1}^{\infty}\overline{(7)}^{n} - 7^1 = 1+(1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 +\ldots\ldots)$

3 $\Longleftrightarrow$ $7*7.\sum_{n=1}^{\infty}\overline{(7)}^{n} - 7^1 - 1 = 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7 + \ldots\ldots$

We continue repeating multiplying the result by 7 and we get this :

3 $\Longleftrightarrow$ $7*(7*7.\sum_{n=1}^{\infty}\overline{(7)}^{n} - 7^1 - 1= 1/7^1 + 1/7^2 + 1/7^3 + 1/7^4 + 1/7^5 + 1/7^6 + 1/7^7+ \ldots)$

3 $\Longleftrightarrow$ $7*7*7.\sum_{n=1}^{\infty}\overline{(7)}^{n} - 7^2 - 7^1 = 1+(1/7^1 +1/7^2 +1/7^3 +1/7^4 +1/7^5 +1/7^6 +1/7^7 +\ldots)$

We continue to repeat multiplying the result by 7 until the infinity and we get :

3 $\Longleftrightarrow$ $7*7*7*\ldots.\sum_{n=1}^{\infty}\overline{(7)}^{n} - (7^1+7^2 +7^3 +7^4 +7^5 +\ldots)= 1+(1/7^1+1/7^2+1/7^3+1/7^4+1/7^5+1/7^6+1/7^7+ \ldots)$

We have: $7*7*7*\ldots.\sum_{n=1}^{\infty}\overline{(7)}^{n} = 0$

Then the result will be:

3 $\Longleftrightarrow$ $-(7^1+7^2+7^3+7^4+7^5+7^6+7^7+ \ldots) =1+(1/7^1+1/7^2+1/7^3+1/7^4+1/7^5+1/7^6+1/7^7\ldots\ldots)$

3 $\Longleftrightarrow$ $(1/7^1+1/7^2+1/7^3+1/7^4+1/7^5+1/7^6+1/7^7+\ldots)+1+(7^1+7^2+7^3+7^4+7^5+7^6+7^7+ \ldots) = 0$

3 $\Longleftrightarrow$ $(7^{-1}+7^{-2}+7^{-3}+7^{-4}+7^{-5}+7^{-6}+7^{-7}+ \ldots) + 7^0+ (7^1+7^2+7^3+7^4+7^5+7^6+7^7\ldots)= 0$

Let $\sum_{n=1}^{\infty} 7^n = 7^1+7^2+7^3+7^4+7^5+7^6+7^7+\ldots\ldots\ldots$

And let $\sum_{n=-1}^{-\infty} 7^n = 7^{-1}+7^{-2}+7^{-3}+7^{-4}+7^{-5}+7^{-6}+7^{-7}+\ldots\ldots$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 7^{n} + 7^{0} + \sum_{n=1}^{+\infty} 7^{n} = 0$$

$$3 \Longleftrightarrow \quad \sum_{n\in Z} 7^{n} = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 15 and Formula 17:

Since Formula 15 is equal to : $\sum_{n=-1}^{-\infty} 1/7^{n} + 1/7^{0} + \sum_{n=1}^{+\infty} 1/7^{n} = 0$

And Formula 17 is equal to : $\sum_{n=-1}^{-\infty} 7^{n} + 7^{0} + \sum_{n=1}^{+\infty} 7^{n} = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/7^{n} + 1/7^{0} + \sum_{n=1}^{+\infty} 1/7^{n} = \sum_{n=-1}^{-\infty} 7^{n} + 7^{0} + \sum_{n=1}^{+\infty} 7^{n} = 0$

$$\boldsymbol{\sum_{n\in Z} 1/7^{n} = \sum_{n\in Z} 7^{n} = 0}$$

** Formula 18:

P is a prime number, let P be the base of this following infinite series:

$P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 +$ ....

Let us denote this previous infinite series $P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 +$ .... by $\sum_{n=1}^{\infty}(P)^{n}$

Then $P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 +$ .... $= \sum_{n=1}^{\infty}(P)^{n}$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(P)^{n}$

we have: $\sum_{n=1}^{\infty}(P)^{n} = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 +$ ....

*7 we are going to multiply P by $\sum_{n=1}^{\infty}(P)^{n}$ and we get as a result this :

$P.\sum_{n=1}^{\infty}(P)^{n} = P^2 + P^3 + P^4 + P^5 + P^6 + P^7 +$ ....

We have: $\sum_{n=1}^{\infty}(P)^{n} - P = P^2 + P^3 + P^4 + P^5 + P^6 + P^7 +$ ....

Let us replace $\sum_{n=1}^{\infty}(P)^{n} - P$ its value and we get as a result this :

$$1= \quad P.\sum_{n=1}^{\infty}(P)^{n} = \sum_{n=1}^{\infty}(P)^{n} - P$$

$1 \Longleftrightarrow$ P.$\sum_{n=1}^{\infty}(P)^n$ - $\sum_{n=1}^{\infty}(P)^n$ = – P

$1 \Longleftrightarrow$ (P – 1).$\sum_{n=1}^{\infty}(P)^n$ = – P

$1 \Longleftrightarrow$ $\boldsymbol{\sum_{n=1}^{\infty}(P)^n = -P/(P-1)}$ and this formula is **Formula 18**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(P)^n$ by P until the infinity?

we multiply P by $\sum_{n=1}^{\infty}(P)^n$ and we get as a result this :

$$P.\sum_{n=1}^{\infty}(P)^n = P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots$$

Then $P.\sum_{n=1}^{\infty}(P)^n = \sum_{n=1}^{\infty}(P)^n - P^1$

We are going to multiply again the result by P and we get this :

$\boxed{2 =}$ $P.(P.\sum_{n=1}^{\infty}(P)^n = P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots)$

$2 \Longleftrightarrow P.P.\sum_{n=1}^{\infty}(P)^n = P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow P.P.\sum_{n=1}^{\infty}(P)^n = \sum_{n=1}^{\infty}(P)^n - P^1 - P^2$

We continue repeating multiplying the result by P and we get this :

$2 \Longleftrightarrow P.(P.P.\sum_{n=1}^{\infty}(P)^n = P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots)$

$2 \Longleftrightarrow P.P.P.\sum_{n=1}^{\infty}(P)^n = P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow P.P.P.\sum_{n=1}^{\infty}(P)^n = \sum_{n=1}^{\infty}(P)^n - P^1 - P^2 - P^3$

As a result $2 \Longleftrightarrow P.P.P.\sum_{n=1}^{\infty}(P)^n = \sum_{n=1}^{\infty}(P)^n - (P^1 + P^2 + P^3)$

We continue to repeat multiplying the result by P until the infinity and we get :

$$P*P*P*\ldots..\sum_{n=1}^{\infty}(P)^n = \sum_{n=1}^{\infty}(P)^n - (P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots)$$

we have $\sum_{n=1}^{\infty}(P)^n = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}(P)^n$ and we get this :

$2 \Longleftrightarrow P*P*P*\ldots..\sum_{n=1}^{\infty}(P)^n = \sum_{n=1}^{\infty}(P)^n - \sum_{n=1}^{\infty}(P)^n$

As a result we get :

$2 \Longleftrightarrow P*P*P*\ldots..\sum_{n=1}^{\infty}(P)^n = 0$

We have as a previous result: $\sum_{n=1}^{\infty}(P)^n$ = – P/(P – 1) ≠ 0

Therefore: **P*P*P*…………………………………… = 0**

Using **theorem and notion 1 of Zero** that states if we multiply a number P by itself until the infinity, we get 0 zero as a result.

** Formula 19:

We have: $\sum_{n=1}^{\infty}(P)^n = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(P)^n$ by 1/P until the infinity?

we have: $\sum_{n=1}^{\infty}(P)^n = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots\ldots$

*1/P we are going to multiply 1/P by $\sum_{n=1}^{\infty}(P)^n$ and we get as a result this :

3= $1/P.\sum_{n=1}^{\infty}(P)^n = 1 + (P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots\ldots)$

3 $\Longleftrightarrow 1/P.\sum_{n=1}^{\infty}(P)^n - 1 = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/P and we get this :

3 $\Longleftrightarrow 1/P*(1/P.\sum_{n=1}^{\infty}(P)^n - 1 = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots\ldots)$

3 $\Longleftrightarrow 1/P*1/P.\sum_{n=1}^{\infty}(P)^n - 1/P^1 = 1 + (P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots\ldots)$

3 $\Longleftrightarrow 1/P*1/P.\sum_{n=1}^{\infty}(P)^n - 1/P^1 - 1 = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/P and we get this :

3 $\Longleftrightarrow 1/P*(1/P*1/P.\sum_{n=1}^{\infty}(P)^n - 1/P^1 - 1 = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots\ldots)$

3 $\Longleftrightarrow 1/P*1/P*1/P.\sum_{n=1}^{\infty}(P)^n - 1/P^2 - 1/P^1 = 1 + (P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + \ldots)$

We continue to repeat multiplying the result by 1/P until the infinity and we get

3 $\Longleftrightarrow 1/P*1/P*1/P*\ldots.\sum_{n=1}^{\infty}(P)^n - (1/P^1 + 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + \ldots) = 1 + (P^1+P^2+P^3+P^4+P^5+P^6+P^7+ \ldots)$

We have: $1/P*1/P*1/P*\ldots.\sum_{n=1}^{\infty}(P)^n = 0$

We are going to prove this result later on

Then the result will be:

3 $\Longleftrightarrow -(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+\ldots) = 1 + (P^1+P^2+P^3+P^4+P^5+P^6+P^7+ \ldots)$

$3 \Longleftrightarrow (P^1+P^2+P^3+P^4+P^5+P^6+P^7+...)+1+(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+...)= 0$

$3 \Longleftrightarrow (1/P^{-1}+1/P^{-2}+1/P^{-3}+1/P^{-4}+1/P^{-5}+1/P^{-6}+1/P^{-7}+ ...)+1/P^0+(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7...)= 0$

Let $\sum_{n=1}^{\infty} 1/P^n = 1/P^1+1/P^2+1/P^3+1/P^4+1/P^5 +1/P^6+ 1/P^7+...$

And let $\sum_{n=-1}^{-\infty} 1/P^n = 1/P^{-1}+1/P^{-2}+1/P^{-3}+1/P^{-4}+1/P^{-5}+1/P^{-6}+1/P^{-7} +..........$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/P^n + 1/P^0 + \sum_{n=1}^{+\infty} 1/P^n = 0$$

$$3 \Longleftrightarrow \quad \sum_{n \in Z} 1/P^n = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 20:

P is a prime number, let P be the base of this following infinite series:

$1/P^1 + 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 +$ ....

Let us denote this previous infinite series $1/P^1 + 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 +$ .... by $\sum_{n=1}^{\infty}\overline{(P)}^{n}$

Then $1/P^1 + 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 +$ .... $= \sum_{n=1}^{\infty}\overline{(P)}^{n}$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{(P)}^{n}$

we have: $\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^1 + 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 +$ ....

*1/P we are going to multiply 1/P by $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ and we get as a result this :

$$1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7+ ....$$

We have: $\sum_{n=1}^{\infty}\overline{(P)}^{n} - 1/P = 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7+$ ....

Let us replace $\sum_{n=1}^{\infty}\overline{(P)}^{n} - 1/P$ its value and we get as a result this :

$$1= \quad 1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = \sum_{n=1}^{\infty}\overline{(P)}^{n} - 1/P$$

$$1 \Longleftrightarrow 1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} - \sum_{n=1}^{\infty}\overline{(P)}^{n} = -1/P$$

$$1 \Longleftrightarrow (1/P - 1).\sum_{n=1}^{\infty}\overline{(P)}^{n} = -1/P$$

$$1 \Longleftrightarrow ((1-P)/P).\sum_{n=1}^{\infty}\overline{(P)}^{n} = -1/P$$

$1 \Longleftrightarrow ((P-1)/P).\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P$

$1 \Longleftrightarrow \sum_{n=1}^{\infty}\overline{(\mathbf{P})}^{n} = \mathbf{1/(P-1)}$ and this formula is **Formula 20**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ by 1/P until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^1 + 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7{+}+ \ldots\ldots\ldots\ldots$

we multiply 1/P by $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ and we get as a result this :

$1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 + \ldots\ldots\ldots\ldots\ldots$

Then $1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = \sum_{n=1}^{\infty}(P)^{n} - 1/P^1$

We are going to multiply again the result by 1/P and we get this :

$\boxed{2 =}$ $1/P.(1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^2 + 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 + \ldots\ldots)$

$2 \Longleftrightarrow 1/P*1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 + \ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 1/P*1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = \sum_{n=1}^{\infty}\overline{(P)}^{n} - 1/P^1 - 1/P^2$

We continue repeating multiplying the result by 1/P and we get this :

$2 \Longleftrightarrow 1/P*(1/P*1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^3 + 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 + \ldots\ldots)$

$2 \Longleftrightarrow 1/P*1/P*1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^4 + 1/P^5 + 1/P^6 + 1/P^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 1/P*1/P*1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = \sum_{n=1}^{\infty}\overline{(P)}^{n} - 1/P^1 - 1/P^2 - 1/P^3$

As a result $2 \Longleftrightarrow 1/P*1/P*1/P.\sum_{n=1}^{\infty}\overline{(P)}^{n} = \sum_{n=1}^{\infty}\overline{(P)}^{n} - (1/P^1 + 1/P^2 + 1/P^3)$

We continue to repeat multiplying the result by 1/P until the infinity and we get

$*1/P*1/P*1/P*\ldots\sum_{n=1}^{\infty}\overline{(P)}^{n} = \sum_{n=1}^{\infty}\overline{(P)}^{n} - (1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+\ldots)$

we have $\sum_{n=1}^{\infty}\overline{(P)}^{n} = 1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+ \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ and we get this :

$2 \Longleftrightarrow 1/P*1/P*1/P*\ldots\ldots\sum_{n=1}^{\infty}\overline{(P)}^{n} = \sum_{n=1}^{\infty}\overline{(P)}^{n} - \sum_{n=1}^{\infty}\overline{(P)}^{n}$

As a result we get :

$2 \Longleftrightarrow 1/P*1/P*1/P*\ldots\ldots\sum_{n=1}^{\infty}\overline{(P)}^{n} = 0$

We have as a previous result: $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = 1/(P – 1) ≠ 0

Therefore: **1/P*1/P*1/P*……………………………………… = 0**

Using **theorem and notion 1 of Zero** that states if we multiply a number 1/P by itself until the infinity, we get 0 zero as a result.

** Formula 21:

We have: $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = $1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+$ ……………

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ by Puntil the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = $1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+$ ……………

*P we are going to multiply P by $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ and we get as a result this :

3= $P.\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = $1+(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+....)$

3 $\Longleftrightarrow$ $P.\sum_{n=1}^{\infty}\overline{(P)}^{n} - 1 = 1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+$ ……………

We continue repeating multiplying the result by P and we get this :

3 $\Longleftrightarrow$ $P*(P.\sum_{n=1}^{\infty}\overline{(P)}^{n} - 1 = 1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+ ....)$

3 $\Longleftrightarrow$ $P*P.\sum_{n=1}^{\infty}\overline{(P)}^{n} - P^1 = 1+(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+......)$

3 $\Longleftrightarrow$ $P*P.\sum_{n=1}^{\infty}\overline{(P)}^{n} - P^1 - 1 = 1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+ ......$

We continue repeating multiplying the result by P and we get this :

3 $\Longleftrightarrow$ $P*(P*P.\sum_{n=1}^{\infty}\overline{(P)}^{n} - P^1 - 1= 1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+ ...)$

3 $\Longleftrightarrow$ $P*P*P.\sum_{n=1}^{\infty}\overline{(P)}^{n} - P^2 - P^1 = 1+(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+...)$

We continue to repeat multiplying the result by P until the infinity and we get :

3 $\Longleftrightarrow$ $P*P*P*....\sum_{n=1}^{\infty}\overline{(P)}^{n} - (P^1+P^2+P^3+P^4+P^5+...)= 1+(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+ ...)$

We have: $P*P*P*....\sum_{n=1}^{\infty}\overline{(P)}^{n} = 0$

Then the result will be:

3 $\Longleftrightarrow$ $-(P^1+P^2+P^3+P^4+P^5+P^6+P^7+ ...) =1+(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7.....)$

3 $\Longleftrightarrow$ $(1/P^1+1/P^2+1/P^3+1/P^4+1/P^5+1/P^6+1/P^7+...)+1+(P^1+P^2+P^3+P^4+P^5+P^6+P^7+...) = 0$

3 $\Longleftrightarrow$ $(P^{-1}+P^{-2}+P^{-3}+P^{-4}+P^{-5}+P^{-6}+P^{-7}+ ...) + P^0+ (P^1+P^2+P^3+P^4+P^5+P^6+P^7...)= 0$

Let $\sum_{n=1}^{\infty} P^n$ = $P^1+P^2+P^3+P^4+P^5+P^6+P^7+$.........

And let $\sum_{n=-1}^{-\infty} P^n$ = $P^{-1}+P^{-2}+P^{-3}+P^{-4}+P^{-5}+P^{-6}+P^{-7}+$.......

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} P^n + P^0 + \sum_{n=1}^{+\infty} P^n = 0$$

$$3 \Longleftrightarrow \quad \sum_{n \in Z} P^n = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 19 and Formula 21:

Since Formula 19 is equal to : $\sum_{n=-1}^{-\infty} 1/P^n + 1/P^0 + \sum_{n=1}^{+\infty} 1/P^n = 0$

And Formula 21 is equal to : $\sum_{n=-1}^{-\infty} P^n + P^0 + \sum_{n=1}^{+\infty} P^n = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/P^n + 1/P^0 + \sum_{n=1}^{+\infty} 1/P^n = \sum_{n=-1}^{-\infty} P^n + P^0 + \sum_{n=1}^{+\infty} P^n = 0$

$$\boldsymbol{\sum_{n \in Z} 1/P^n = \sum_{n \in Z} P^n = 0}$$

** Formula 22 :

3 is a prime number, let 3 be the base of this following infinite series:

$3^s+9^s+27^s+81^s+243^s+729^s+$.....................

If we consider 3 as the base of this infinite series, we will get:

$3^s + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} +$ ....

Let us denote this previous infinite series $3^s + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} +$ .... by $\sum_{\substack{n=s \\ s/s}}^{\infty} (3)^n$

Then $3^s + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} +$ .... = $\sum_{\substack{n=s \\ s/s}}^{\infty} (3)^n$

Now , let us calculate the sum of $\sum_{\substack{n=s \\ s/s}}^{\infty} (3)^n$

we have: $\sum_{\substack{n=s \\ s/s}}^{\infty} (3)^n = 3^s + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} +$ ....

$*3^s$ we are going to multiply 3^s by $\sum_{\substack{n=s \\ s/s}}^{\infty} (3)^n$ and we get as a result this :

$$3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots..$$

We have: $\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n - 3^s = 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots..$

Let us replace $\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n - 3^s$ its value and we get as a result this :

$$1= \quad 3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = \underset{s/s}{\sum_{n=s}^{\infty}}(3)^n - 3^s$$

$$1 \Longleftrightarrow 3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n - \underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = -3^s$$

$$1 \Longleftrightarrow (3^s - 1)\ .\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = -3^s$$

$1 \Longleftrightarrow \boldsymbol{\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = -3s/(3s-1)}$ and this formula is **Formula 22**

<u>Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n$ by 3 until the infinity?</u>

we multiply 3^s by $\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n$ and we get as a result this :

$$3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots..$$

Then $\quad 3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = \underset{s/s}{\sum_{n=s}^{\infty}}(3)^n - 3^s$

We are going to multiply again the result by $\mathbf{3^s}$ and we get this :

$$\boxed{2 =} \quad 3^s.(3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots..)$$

$$2 \Longleftrightarrow 3^s.3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots..$$

Then we get $\quad 2 \Longleftrightarrow 3^s.3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = \underset{s/s}{\sum_{n=s}^{\infty}}(3)^n - 3^s - 3^{2s}$

We continue repeating multiplying the result by $\mathbf{3^s}$ and we get this :

$$2 \Longleftrightarrow 3^s.(3^s.3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots..)$$

$$2 \Longleftrightarrow 3^s.3^s.3^s.\underset{s/s}{\sum_{n=s}^{\infty}}(3)^n = 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots..$$

Then we get $2 \Longleftrightarrow 3^{s}.3^{s}.3^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} - 3^{s} - 3^{2s} - 3^{3s}$

As a result $2 \Longleftrightarrow 3^{s}.3^{s}.3^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} - (3^{s} + 3^{2s} + 3^{3s})$

We continue to repeat multiplying the result by $\mathbf{3^{s}}$ until the infinity and we get

$$*3^{s}*3^{s}*3^{s}*\ldots..\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} - (3^{s} + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots)$$

we have $\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = 3^{s} + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}}$ and we get this :

$$2 \Longleftrightarrow 3^{s}*3^{s}*3^{s}*\ldots..\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} - \underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}}$$

As a result we get :

$$2 \Longleftrightarrow 3^{s}*3^{s}*3^{s}*\ldots..\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = 0$$

We have as a previous result: $\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = -3^{s}/(3^{s}-1) \neq 0$

Therefore: $\mathbf{3^{s}*3^{s}*3^{s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{3^{s}}$ by itself until the infinity, we get 0 zero as a result.

** Formula 23:

We have: $\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = 3^{S} + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots\ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}}$ by $1/3^{s}$ until the infinity?</u>

we have: $\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = 3^{S} + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots\ldots$

$*1/3^{s}$ we are going to multiply $1/3^{s}$ by $\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}}$ and we get as a result this :

$$3 = 1/3^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} = 1 + (3^{S} + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/3^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(3)^{n}} - 1 = 3^{S} + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots\ldots$$

We continue repeating multiplying the result by **$1/3^s$** and we get this :

$$3 \Longleftrightarrow 1/3^s*(1/3^s.\sum_{\substack{n=s \\ s/s}}^{\infty}(3)^n - 1 = 3^s + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/3^s*1/3^s.\sum_{\substack{n=s \\ s/s}}^{\infty}(3)^n - 1/3^s = 1+(3^s + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots)$$

$$3 \Longleftrightarrow 1/3^s*1/3^s.\sum_{\substack{n=s \\ s/s}}^{\infty}(3)^n - 1/3^s - 1 = 3^s + 3^{2s} + 3^{3s} + 3^{4s} + 3^{5s} + 3^{6s} + 3^{7s} + \ldots\ldots\ldots$$

We continue repeating multiplying the result by **$1/3^s$** and we get this :

$$3 \Longleftrightarrow 1/3^s*(1/3^s*1/3^s.\sum_{\substack{n=s \\ s/s}}^{\infty}(3)^n - 1/3^s - 1 = 3^s +3^{2s} +3^{3s} +3^{4s} +3^{5s} +3^{6s} +3^{7s} + \ldots)$$

$$3 \Longleftrightarrow 1/3^s*1/3^s*1/3^s.\sum_{\substack{n=s \\ s/s}}^{\infty}(3)^n - 1/3^{2s} - 1/3^s = 1+(3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+3^{6s}+3^{7s} + \ldots)$$

We continue to repeat multiplying the result by **$1/3^s$** until the infinity and we get

$$3 \Longleftrightarrow 1/3^s*1/3^s*1/3^s*\ldots\sum_{\substack{n=s \\ s/s}}^{\infty}(3)^n - (1/3^s+1/3^{2s} +1/3^{3s} +1/3^{4s} +1/3^{5s} +\ldots)= 1+(3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+ \ldots)$$

We have: $1/3^s*1/3^s*1/3^s*\ldots.\sum_{\substack{n=s \\ s/s}}^{\infty}(3)^n = 0$

We are going to prove this result later on

Then the result will be:

$$3 \Longleftrightarrow - (1/3^s+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s}+\ldots)= 1+(3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+ \ldots)$$

$$3 \Longleftrightarrow (3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+ \ldots) +1+(1/3^s+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s}+\ldots)= 0$$

$$3 \Longleftrightarrow (1/3^{-s}+1/3^{-2s}+1/3^{-3s}+1/3^{-4s}+1/3^{-5s}+ \ldots)+1/3^{0s}+(1/3^s+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s}\ldots)= 0$$

Let $\sum_{n=1}^{+\infty} 1/3^{ns} = 1/3^s+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s}+1/3^{6s}+1/3^{7s} +\ldots\ldots\ldots.$

And let $\sum_{n=-1}^{-\infty} 1/3^{ns} = 1/3^{-s}+1/3^{-2s}+1/3^{-3s}+1/3^{-4s}+1/3^{-5s}+1/3^{-6s}+1/3^{-7s} +\ldots\ldots\ldots.$

Then the result will be:

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 1/3^{ns} + 1/3^{0s} + \sum_{n=1}^{+\infty} 1/3^{ns} = 0$$

$$3 \Longleftrightarrow \sum_{n \in Z} 1/3^{ns} = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 24 :

3 is a prime number, let 3 be the base of this following infinite series:

$1/3^s + 1/9^s + 1/27^s + 1/81^s + 1/243^s + 1/729^s + \ldots\ldots\ldots\ldots$

If we consider 3 as the base of this infinite series, we will get:

$1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/3^1 + 1/3^2 + 1/3^3 + 1/3^4 + 1/3^5 + 1/3^6 + 1/3^7 + \ldots\ldots$ by $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}}$

Then $1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots\ldots = \underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}}$

Now , let us calculate the sum of $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}}$

we have: $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = 1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots$

$*1/3^s$ we are going to multiply $1/3^s$ by $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}}$ and we get as a result this :

$$1/3^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots$$

We have: $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} - 1/3^s = 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots$

Let us replace $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} - 1/3^s$ its value and we get as a result this :

$$1= \quad 1/3^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} - 1/3^s$$

$$1 \Longleftrightarrow 1/3^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} - \underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = -1/3^s$$

$$1 \Longleftrightarrow (1/3^s - 1).\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = -1/3^s$$

$$1 \Longleftrightarrow ((1-3^s)/3^s).\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = -1/3^s$$

$$1 \Longleftrightarrow ((3^s-1)/3^s).\underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = 1/3^s$$

$1 \Longleftrightarrow \underset{s/s}{\sum_{n=s}^{\infty}\overline{(3)}^{n}} = 1/(3^s - 1)$ and this formula is **Formula 24**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}}$ by $1/3^{s}$ until the infinity?

we have: $$\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = 1/3^{s} + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots\ldots$$

we multiply $\mathbf{1/3^{s}}$ by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}}$ and we get as a result this :

$$1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then $$1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} - 1/3^{s}$$

We are going to multiply again the result by $\mathbf{1/3^{s}}$ and we get this :

$$\boxed{2 =}\quad 1/3^{s}.(1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots)$$

$$2 \Longleftrightarrow 1/3^{s}*1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots$$

Then we get $$2 \Longleftrightarrow 1/3^{s}*1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} - 1/3^{s} - 1/3^{2s}$$

We continue repeating multiplying the result by $\mathbf{1/3^{s}}$ and we get this :

$$2 \Longleftrightarrow 1/3^{s}*(1/3^{s}*1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/3^{s}*1/3^{s}*1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots$$

Then we get $$2 \Longleftrightarrow 1/3^{s}*1/3^{s}*1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} - 1/3^{s} - 1/3^{2s} - 1/3^{3s}$$

As a result $$2 \Longleftrightarrow 1/3^{s}*1/3^{s}*1/3^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} - (1/3^{s} + 1/3^{2s} + 1/3^{3s})$$

We continue to repeat multiplying the result by $\mathbf{1/3^{s}}$ until the infinity and we get

$$*1/3^{s}*1/3^{s}*1/3^{s}*\ldots\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} - (1/3^{s}+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s}+\ldots)$$

we have $$\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = 1/3^{s} + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots\ldots$$

we replace the right side of the result by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}}$ and we get this :

$$2 \Longleftrightarrow 1/3^{s}*1/3^{s}*1/3^{s}*\ldots\ldots\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}} - \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^{n}}$$

As a result we get :

$$2 \Longleftrightarrow 1/3^s*1/3^s*1/3^s*.....\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} = 0$$

We have as a previous result: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} = 1/(3^s - 1) \neq 0$

Therefore: $\mathbf{1/3^{s}*1/3^{s}*1/3^{s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{1/3^s}$ by itself until the infinity, we get 0 zero as a result.

** Formula 25 :

We have: $\sum_{n=1}^{\infty}\overline{(3)}^{n} = 1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n}$ by 3^s until the infinity?

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} = 1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots\ldots\ldots$

$*3^s$ we are going to multiply 3^s by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n}$ and we get as a result this :

$$3 = 3^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} = 1 + (1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots.)$$

$$3 \Longleftrightarrow 3^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} - 1 = 1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots\ldots\ldots$$

We continue repeating multiplying the result by $\mathbf{3^s}$ and we get this :

$$3 \Longleftrightarrow 3^s*(3^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} - 1 = 1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots)$$

$$3 \Longleftrightarrow 3^s*3^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} - 3^s = 1+(1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots)$$

$$3 \Longleftrightarrow 3^s*3^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} - 3^s - 1 = 1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots$$

We continue repeating multiplying the result by 3 and we get this :

$$3 \Longleftrightarrow 3^s*(3^s*3^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} - 3^s - 1 = 1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + 1/3^{6s} + 1/3^{7s} + \ldots)$$

$$3 \Longleftrightarrow 3^s*3^s*3^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)}^{n} - 3^{2s} - 3^s = 1+(1/3^s + 1/3^{2s} + 1/3^{3s} + 1/3^{4s} + 1/3^{5s} + \ldots\ldots)$$

We continue to repeat multiplying the result by 3^s until the infinity and we get :

$3 \Longleftrightarrow 3^s*3^s*3^s*....\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^n} - (3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+...) = 1+(1/3^s+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s}+ ...)$

We have: $3^s*3^s*3^s*....\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(3)^n} = 0$

Then the result will be:

$3 \Longleftrightarrow -(3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+...) = 1+ (1/3^s+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s} + ...)$

$3 \Longleftrightarrow (1/3^s+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s} +...) +1+ (3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+...) = 0$

$3 \Longleftrightarrow (3^{-s}+3^{-2s}+3^{-3s}+3^{-4s}+3^{-5s}+ ...) + 3^{0s}+ (3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+...)= 0$

Let $\sum_{n=1}^{+\infty} 3^{ns} = 3^s+3^{2s}+3^{3s}+3^{4s}+3^{5s}+3^{6s}+3^{7s}+........$

And let $\sum_{n=-1}^{-\infty} 3^{ns} = 3^{-s}+3^{-2s}+3^{-3s}+3^{-4s}+3^{-5s}+3^{-6s}+3^{-7s}+.......$

Then the result will be:

$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 3^{ns} + 3^{0s} + \sum_{n=1}^{+\infty} 3^{ns} = 0$

$3 \Longleftrightarrow \quad \sum_{n\in Z} 3^{ns} = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** ,the sum of positive numbers is zero 0.

** The equality and similarity of Formula 23 and Formula 25:

Since Formula 23 is equal to : $\sum_{n=-1}^{-\infty} 1/3^{ns} + 1/3^{0s} + \sum_{n=1}^{+\infty} 1/3^{ns} = 0$

And Formula 25 is equal to : $\sum_{n=-1}^{-\infty} 3^{ns} + 3^{0s} + \sum_{n=1}^{+\infty} 3^{ns} = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/3^{ns} + 1/3^{0s} + \sum_{n=1}^{+\infty} 1/3^{ns} = \sum_{n=-1}^{-\infty} 3^{ns} + 3^{0s} + \sum_{n=1}^{+\infty} 3^{ns} = 0$

$$\boldsymbol{\sum_{n\in Z} 1/3^{ns} = \sum_{n\in Z} 3^{ns} = 0}$$

** Formula 26:

7 is a prime number, let 7 be the base of this following infinite series:

$7^s + 49^s + 343^s + 2401^s + 9604^s + 67228^s +$.....................

If we consider 7 as the base of this infinite series, we will get:

$7^{s} + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $7^{s} + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + \ldots\ldots\ldots\ldots\ldots$ by $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}}$

Then $7^{s} + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = \underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}}$

Now , let us calculate the sum of $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}}$

we have: $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = 7^{s} + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + \ldots\ldots\ldots\ldots\ldots$

$*7^{s}$ we are going to multiply 7^{s} by $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}}$ and we get as a result this :

$$7^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + \ldots\ldots\ldots\ldots\ldots$$

We have: $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} - 7^{s} = 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} - 7^{s}$ its value and we get as a result this :

$$1 = \quad 7^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} - 7^{s}$$

$$1 \Longleftrightarrow 7^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} - \underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = -7^{s}$$

$$1 \Longleftrightarrow (7^{s} - 1)\,.\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = -7^{s}$$

$$1 \Longleftrightarrow \underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = -7^{s}/(7^{s} - 1)$$ and this formula is **Formula 26**

<u>Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}}$ by 7^{s} until the infinity?</u>

we multiply $\mathbf{7^{s}}$ by $\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}}$ and we get as a result this :

$$7^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then $7^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(7)^{n}} - 7^{s}$

We are going to multiply again the result by $\mathbf{7^{s}}$ and we get this :

$\boxed{2 =}$ $7^s.(7^s.\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...)$

$2 \Longleftrightarrow 7^s.7^s.\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...$

Then we get $2 \Longleftrightarrow 7^s.7^s.\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = \sum_{\substack{n=s\\s/s}}^{\infty}(7)^n - 7^s - 7^{2s}$

We continue repeating multiplying the result by $\mathbf{7^s}$ and we get this :

$2 \Longleftrightarrow 7^s.(7^s.7^s.\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...)$

$2 \Longleftrightarrow 7^s.7^s.7^s.\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...$

Then we get $2 \Longleftrightarrow 7^s.7^s.7^s.\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = \sum_{\substack{n=s\\s/s}}^{\infty}(7)^n - 7^s - 7^{2s} - 7^{3s}$

As a result $2 \Longleftrightarrow 7^s.7^s.7^s.\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = \sum_{\substack{n=s\\s/s}}^{\infty}(7)^n - (7^s + 7^{2s} + 7^{3s})$

We continue to repeat multiplying the result by $\mathbf{7^s}$ until the infinity and we get :

$7^s*7^s*7^s*.....\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = \sum_{\substack{n=s\\s/s}}^{\infty}(7)^n - (7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} +.........)$

we have $\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = 7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s}$ ....

we replace the right side of the result by $\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n$ and we get this :

$2 \Longleftrightarrow 7^s*7^s*7^s*.....\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = \sum_{\substack{n=s\\s/s}}^{\infty}(7)^n - \sum_{\substack{n=s\\s/s}}^{\infty}(7)^n$

As a result we get :

$2 \Longleftrightarrow 7^s*7^s*7^s*.....\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = 0$

We have as a previous result: $\sum_{\substack{n=s\\s/s}}^{\infty}(7)^n = -7^s/(7^s - 1) \neq 0$

Therefore: $\mathbf{7^s*7^s*7^s*.. = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{7^s}$ by itself until the infinity, we get 0 zero as a result.

** Formula 27:

We have: $\sum_{n=s}^{\infty}{}_{s/s}(7)^n = 7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=s}^{\infty}{}_{s/s}(7)^n$ by $1/7^s$ until the infinity?</u>

we have: $\sum_{n=s}^{\infty}{}_{s/s}(7)^n = 7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...$

$*1/7^s$ we are going to multiply $1/7^s$ by $\sum_{n=s}^{\infty}{}_{s/s}(7)^n$ and we get as a result this :

$$3 = 1/7^s.\sum_{n=s}^{\infty}{}_{s/s}(7)^n = 1 + (7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...)$$

$$3 \Longleftrightarrow 1/7^s.\sum_{n=s}^{\infty}{}_{s/s}(7)^n - 1 = 7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...$$

We continue repeating multiplying the result by **$1/7^s$** and we get this :

$$3 \Longleftrightarrow 1/7^s*(1/7^s.\sum_{n=s}^{\infty}{}_{s/s}(7)^n - 1 = 7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...)$$

$$3 \Longleftrightarrow 1/7^s*1/7^s.\sum_{n=s}^{\infty}{}_{s/s}(7)^n - 1/7^s = 1 + (7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...)$$

$$3 \Longleftrightarrow 1/7^s*1/7^s.\sum_{n=s}^{\infty}{}_{s/s}(7)^n - 1/7^s - 1 = 7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} + ...$$

We continue repeating multiplying the result by **$1/7^s$** and we get this :

$$3 \Longleftrightarrow 1/7^s*(1/7^s*1/7^s.\sum_{n=s}^{\infty}{}_{s/s}(7)^n - 1/7^s - 1 = 7^s + 7^{2s} + 7^{3s} + 7^{4s} + 7^{5s} + 7^{6s} + 7^{7s} +...)$$

$$3 \Longleftrightarrow 1/7^s*1/7^s*1/7^s.\sum_{n=s}^{\infty}{}_{s/s}(7)^n - 1/7^{2s} - 1/7^s = 1+(7^s+7^{2s} +7^{3s} +7^{4s} +7^{5s} +7^{6s} +7^{7s} +...)$$

We continue to repeat multiplying the result by **$1/7^s$** until the infinity and we get :

$$3 \Longleftrightarrow 1/7^s*1/7^s*1/7^s*....\sum_{n=s}^{\infty}{}_{s/s}(7)^n - (1/7^s+1/7^{2s} +1/7^{3s} +1/7^{4s} +1/7^{5s} +...)= 1+(7^s+7^{2s}+7^{3s}+7^{4s}+7^{5s}+ ...)$$

We have: $1/7^s*1/7^s*1/7^s*....\sum_{n=s}^{\infty}{}_{s/s}(7)^n = 0$

We are going to prove this result later on

Then the result will be:

$$3 \Longleftrightarrow -(1/7^s+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s} +...)=1+(7^s+7^{2s}+7^{3s}+7^{4s}+7^{5s}+ ...)$$

$3 \Longleftrightarrow (7^{s}+7^{2s}+7^{3s}+7^{4s}+7^{5s}+\ldots)+1+(1/7^{s}+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+\ldots)=0$

$3 \Longleftrightarrow (1/7^{-s}+1/7^{-2s}+1/7^{-3s}+1/7^{-4s}+1/7^{-5s}+\ldots)+1/7^{0s}+(1/7^{s}+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+\ldots)=0$

Let $\sum_{n=1}^{+\infty} 1/7^{ns} = 7^{s}+7^{2s}+7^{3s}+7^{4s}+7^{5s}+1/7^{6s}+1/7^{7s}+\ldots$

And let $\sum_{n=-1}^{-\infty} 1/7^{ns} = 1/7^{-s}+1/7^{-2s}+1/7^{-3s}+1/7^{-4s}+1/7^{-5s}+1/7^{-6s}+1/7^{-7s}+\ldots\ldots\ldots.$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/7^{ns} + 1/7^{0s} + \sum_{n=1}^{+\infty} 1/7^{ns} = 0$$

$$3 \Longleftrightarrow \quad \sum_{n\in Z} 1/7^{ns} = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 28:

7 is a prime number, let 7 be the base of this following infinite series:

$1/7^{s} + 1/49^{s} + 1/343^{s} + 1/2401^{s} + 1/9604^{s} + 1/67228^{s} + \ldots\ldots\ldots\ldots\ldots\ldots$

If we consider 7 as the base of this infinite series, we will get:

$1/7^{s} + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/7^{s} + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots$ by $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n}$

Then $1/7^{s} + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots = \sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n}$

Now , let us calculate the sum of $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n}$

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n} = 1/7^{s} + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots$

$*1/7^{s}$ we are going to multiply $1/7^{s}$ by $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n}$ and we get as a result this :

$$1/7^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n} = 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots\ldots$$

We have: $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n} - 1/7^{s} = 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{\substack{n=s\\ s/s}}^{\infty} \overline{(7)}^{n} - 1/7^{s}$ its value and we get as a result this :

$$1= \quad 1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = \sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} - 1/7^s$$

$$1 \Longleftrightarrow 1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} - \sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = -1/7^s$$

$$1 \Longleftrightarrow (1/7^s - 1).\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = -1/7^s$$

$$1 \Longleftrightarrow ((1-7^s)/7^s).\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = -1/7^s$$

$$1 \Longleftrightarrow ((7^s-1)/7^s).\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1/7^s$$

$$1 \Longleftrightarrow (7^s - 1).\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1$$

$$1 \Longleftrightarrow \boldsymbol{\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1/(7^s - 1)}$$ and this formula is **Formula 28**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s}$ by $1/7^s$ until the infinity?

we have: $\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots$

we multiply $1/7^s$ by $\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s}$ and we get as a result this :

$$1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then $$1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = \sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} - 1/7^s$$

We are going to multiply again the result by $\mathbf{1/7^s}$ and we get this :

$$\boxed{2 =} \quad 1/7^s.(1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots)$$

$$2 \Longleftrightarrow 1/7^s*1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots$$

Then we get $$2 \Longleftrightarrow 1/7^s*1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = \sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} - 1/7^s - 1/7^{2s}$$

We continue repeating multiplying the result by $\mathbf{1/7^s}$ and we get this :

$$2 \Longleftrightarrow 1/7^s*(1/7^s*1/7^s.\sum_{n=s}^{\infty}\overline{(7)}^n_{s/s} = 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/7^s*1/7^s*1/7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/7^s*1/7^s*1/7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} - 1/7^s - 1/7^{2s} - 1/7^{3s}$

As a result $2 \Longleftrightarrow 1/7^s*1/7^s*1/7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} - (1/7^s + 1/7^{2s} + 1/7^{3s})$

We continue to repeat multiplying the result by **$1/7^s$** until the infinity and we get

$$*1/7^s*1/7^s*1/7^s*\ldots\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} - (1/7^s+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+\ldots)$$

we have $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = 1/7^s+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+1/7^{6s}+1/7^{7s}+ \ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/7^s*1/7^s*1/7^s*\ldots\ldots\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} - \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/7^s*1/7^s*1/7^s*\ldots\ldots\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = 0$$

We have as a previous result: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = 1/(7^s - 1) \neq 0$

Therefore: $\mathbf{1/7^{s}*1/7^{s}*1/7^{s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/7^s$** by itself until the infinity, we get 0 zero as a result.

** Formula 29:

We have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = 1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(7)}^{n}$ by 7^s until the infinity?</u>

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = 1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + \ldots\ldots\ldots\ldots$

$*7^s$ we are going to multiply 7^s by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n}$ and we get as a result this :

$$3= 7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^{n} = 1+ (1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} +\ldots.)$$

$3 \Longleftrightarrow 7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^n - 1 = 1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + ...$

We continue repeating multiplying the result by $\mathbf{7^s}$ and we get this :

$3 \Longleftrightarrow 7^s*(7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)}^n - 1 = 1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + 1/7^{6s} + 1/7^{7s} + ...)$

$3 \Longleftrightarrow 7^s*7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)^n} - 7^s = 1+(1/7^s +1/7^{2s} +1/7^{3s} +1/7^{4s} +1/7^{5s} +1/7^{6s} +1/7^{7s} +...)$

$3 \Longleftrightarrow 7^s*7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)^n} - 7^s - 1 = 1/7^s +1/7^{2s} +1/7^{3s} +1/7^{4s} +1/7^{5s} +1/7^{6s} +1/7^{7s} + ...$

We continue repeating multiplying the result by $\mathbf{7^s}$ and we get this :

$3 \Longleftrightarrow 7^s*(7^s*7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)^n} - 7^s - 1= 1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} + ...)$

$3 \Longleftrightarrow 7^s*7^s*7^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)^n} - 7^{2s} - 7^s = 1+(1/7^s + 1/7^{2s} + 1/7^{3s} + 1/7^{4s} + 1/7^{5s} +...)$

We continue to repeat multiplying the result by $\mathbf{7^s}$ until the infinity and we get :

$3 \Longleftrightarrow 7^s*7^s*7^s*....\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)^n} - (7^s+7^{2s} +7^{3s} +7^{4s} +7^{5s} +...)= 1+(1/7^s+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+ ...)$

We have: $7^s*7^s*7^s*....\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(7)^n} = 0$

Then the result will be:

$3 \Longleftrightarrow - (7^s+7^{2s}+7^{3s}+7^{4s}+7^{5s}+ ...) =1+ (1/7^s+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+.....)$

$3 \Longleftrightarrow (1/7^s+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+...)+1+(7^s+7^{2s}+7^{3s}+7^{4s}+7^{5s}+ ...) = 0$

$3 \Longleftrightarrow (7^{-s}+7^{-2s}+7^{-3s}+7^{-4s}+7^{-5s}+7^{-6s}+7^{-7s}+ ...) + 7^{0s}+ (7^s+7^{2s}+7^{3s}+7^{4s}+7^{5s}+7^{6s}+7^{7s}...)= 0$

Let $\sum_{n=1}^{\infty} 7^{ns} = 7^s+7^{2s}+7^{3s}+7^{4s}+7^{5s}+7^{6s}+7^{7s}+.........$

And let $\sum_{n=-1}^{-\infty} 7^{ns} = 7^{-s}+7^{-2s}+7^{-3s}+7^{-4s}+7^{-5s}+7^{-6s}+7^{-7s}+.......$

Then the result will be:

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 7^{ns} + 7^{0s} + \sum_{n=1}^{+\infty} 7^{ns} = 0$

$3 \Longleftrightarrow \sum_{n\in Z} 7^{ns} = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 27 and Formula 29:

Since Formula 27 is equal to : $\sum_{n=-1}^{-\infty} 1/7^{ns} + 1/7^{0s} + \sum_{n=1}^{+\infty} 1/7^{ns} = 0$

And Formula 29 is equal to : $\sum_{n=-1}^{-\infty} 7^{ns} + 7^{0s} + \sum_{n=1}^{+\infty} 7^{ns} = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/7^{ns} + 1/7^{0s} + \sum_{n=1}^{+\infty} 1/7^{ns} = \sum_{n=-1}^{-\infty} 7^{ns} + 7^{0s} + \sum_{n=1}^{+\infty} 7^{ns} = 0$

$$\sum_{n\in Z} \mathbf{1/7^{ns}} = \sum_{n\in Z} \mathbf{7^{ns}} = \mathbf{0}$$

** Formula 30:

P is a prime number, let P be the base of this following infinite series:

$P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n$

Then $p^s + p^{2s} + p^{3s} + p^{4s} + p^{5s} + p^{6s} + p^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = \sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n$

Now , let us calculate the sum of $\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n$

we have: $\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n = p^s + p^{2s} + p^{3s} + p^{4s} + p^{5s} + p^{6s} + p^{7s} + \ldots\ldots\ldots\ldots$

$*p^s$ we are going to multiply p^s by $\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n$ and we get as a result this :

$$P^s.\sum_{\substack{n=s \\ s/s}}^{\infty} (P)^n = p^{2s} + p^{3s} + p^{4s} + p^{5s} + p^{6s} + p^{7s} + \ldots\ldots\ldots\ldots$$

We have: $\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n - p^s = p^{2s} + p^{3s} + p^{4s} + p^{5s} + p^{6s} + p^{7s} + \ldots\ldots\ldots\ldots$

Let us replace $\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n - p^s$ its value and we get as a result this :

$$1= \quad p^s.\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n = \sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n - p^s$$

$$1 \Longleftrightarrow p^s.\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n - \sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n = -p^s$$

$$1 \Longleftrightarrow (p^s - 1) .\sum_{\substack{n=s \\ s/s}}^{\infty} (p)^n = -p^s$$

$1 \Longleftrightarrow \sum_{n=s \atop s/s}^{\infty}(p)^n = -p^s/(p^s-1)$ and this formula is **Formula 30**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=s \atop s/s}^{\infty}(P)^n$ by P^s until the infinity?

we multiply P^s by $\sum_{n=s \atop s/s}^{\infty}(P)^n$ and we get as a result this :

$$P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then $P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = \sum_{n=s \atop s/s}^{\infty}(P)^n - P^s$

We are going to multiply again the result by P^s and we get this :

$$\boxed{2 =}\quad P^s.(P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow P^s.P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow P^s.P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = \sum_{n=s \atop s/s}^{\infty}(P)^n - P^s - P^{2s}$

We continue repeating multiplying the result by P^s and we get this :

$$2 \Longleftrightarrow P^s.(P^s.P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow P^s.P^s.P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow P^s.P^s.P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = \sum_{n=s \atop s/s}^{\infty}(P)^n - P^s - P^{2s} - P^{3s}$

As a result $2 \Longleftrightarrow P^s.P^s.P^s.\sum_{n=s \atop s/s}^{\infty}(P)^n = \sum_{n=s \atop s/s}^{\infty}(P)^n - (P^s + P^{2s} + P^{3s})$

We continue to repeat multiplying the result by P^s until the infinity and we get :

$$P^s*P^s*P^s*\ldots\ldots\sum_{n=s \atop s/s}^{\infty}(P)^n = \sum_{n=s \atop s/s}^{\infty}(P)^n - (P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots)$$

we have $\sum_{n=s \atop s/s}^{\infty}(P)^n = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=s \atop s/s}^{\infty}(P)^n$ and we get this :

$$2 \Longleftrightarrow P^s*P^s*P^s*\ldots\ldots\sum_{n=s \atop s/s}^{\infty}(P)^n = \sum_{n=s \atop s/s}^{\infty}(P)^n - \sum_{n=s \atop s/s}^{\infty}(P)^n$$

As a result we get :

$$2 \Longleftrightarrow P^s * P^s * P^s * \ldots\ldots \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} = 0$$

We have as a previous result: $\underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} = -P^s/(P^s - 1) \neq 0$

Therefore: $P^s * P^s * P^s * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{P^s}$ by itself until the infinity, we get 0 zero as a result.

** Formula 31:

We have: $\underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}}$ by $1/P^s$ until the infinity?

we have: $\underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots$

$*1/P^s$ we are going to multiply $1/P^s$ by $\underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}}$ and we get as a result this :

$$3 = \ 1/P^s . \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} = 1 + (P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/P^s . \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} - 1 = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots$$

We continue repeating multiplying the result by $\mathbf{1/P^s}$ and we get this :

$$3 \Longleftrightarrow 1/P^s * (1/P^s . \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} - 1 = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/P^s * 1/P^s . \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} - 1/P^s = 1 + (P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots)$$

$$3 \Longleftrightarrow 1/P^s * 1/P^s . \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} - 1/P^s - 1 = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots\ldots$$

We continue repeating multiplying the result by $\mathbf{1/P^s}$ and we get this :

$$3 \Longleftrightarrow 1/P^s * (1/P^s * 1/P^s . \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} - 1/P^s - 1 = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots)$$

$$3 \Longleftrightarrow 1/P^s * 1/P^s * 1/P^s . \underset{s/s}{\sum_{n=s}^{\infty}(P)^{n}} - 1/P^{2s} - 1/P^s = 1 + (P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + \ldots)$$

We continue to repeat multiplying the result by $\mathbf{1/P^s}$ until the infinity and we get :

$3 \Longleftrightarrow 1/P^s * 1/P^s * 1/P^s * \ldots \sum_{n=s}^{\infty} \underset{s/s}{(P)}^{n} - (1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + \ldots) = 1 + (P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + \ldots)$

We have: $1/P^s * 1/P^s * 1/P^s * \ldots \sum_{n=s}^{\infty} \underset{s/s}{(P)}^{n} = 0$

We are going to prove this result later on

Then the result will be:

$3 \Longleftrightarrow -(1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + \ldots) = 1 + (P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + \ldots)$

$3 \Longleftrightarrow (P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + \ldots) + 1 + (1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + \ldots) = 0$

$3 \Longleftrightarrow (1/P^{-s} + 1/P^{-2s} + 1/P^{-3s} + 1/P^{-4s} + 1/P^{-5s} + \ldots) + 1/P^{0s} + (1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + \ldots) = 0$

Let $\sum_{n=1}^{+\infty} 1/P^{ns} = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots$

And let $\sum_{n=-1}^{-\infty} 1/P^{ns} = 1/P^{-s} + 1/P^{-2s} + 1/P^{-3s} + 1/P^{-4s} + 1/P^{-5s} + 1/P^{-6s} + 1/P^{-7s} + \ldots\ldots\ldots.$

Then the result will be:

$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/P^{ns} + 1/P^{0s} + \sum_{n=1}^{+\infty} 1/P^{ns} = 0$

$3 \Longleftrightarrow \quad \sum_{n \in Z} 1/P^{ns} = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 32:

P is a prime number, let P be the base of this following infinite series:

$1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots$ by $\sum_{n=s}^{\infty} \underset{s/s}{\overline{(P)}}^{n}$

Then $1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots = \sum_{n=s}^{\infty} \underset{s/s}{\overline{(P)}}^{n}$

Now , let us calculate the sum of $\sum_{n=s}^{\infty} \underset{s/s}{\overline{(P)}}^{n}$

we have: $\sum_{n=s}^{\infty} \underset{s/s}{\overline{(P)}}^{n} = 1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots$

$*1/P^s$ we are going to multiply $1/P^s$ by $\sum_{n=s}^{\infty} \underset{s/s}{\overline{(P)}}^{n}$ and we get as a result this :

$1/P^s . \sum_{n=s}^{\infty} \underset{s/s}{\overline{(P)}}^{n} = 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots\ldots$

We have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - 1/P^{s} = 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - 1/P^{s}$ its value and we get as a result this :

$$1= \quad 1/P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - 1/P^{s}$$

$$1 \Longleftrightarrow 1/P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = -1/P^{s}$$

$$1 \Longleftrightarrow (1/P^{s} - 1).\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = -1/P^{s}$$

$$1 \Longleftrightarrow ((1-P^{s})/P^{s}).\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = -1/P^{s}$$

$$1 \Longleftrightarrow ((P^{s}-1)/P^{s}).\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1/P^{s}$$

$$1 \Longleftrightarrow (P^{s} - 1).\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1$$

$$1 \Longleftrightarrow \boldsymbol{\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(p)}^{n} = 1/(p^{s} - 1)}$$

and this formula is **Formula 32**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n}$ by $1/P^{s}$ until the infinity?

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1/P^{s} + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots$

we multiply $\mathbf{1/P^{s}}$ by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n}$ and we get as a result this :

$$1/P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then $\quad 1/P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - 1/P^{s}$

We are going to multiply again the result by $\mathbf{1/P^{s}}$ and we get this :

$$\boxed{2 =} \quad 1/P^{s}.(1/P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots)$$

$$2 \Longleftrightarrow 1/P^{s}*1/P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/P^s*1/P^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n - 1/P^s - 1/P^{2s}$

We continue repeating multiplying the result by **$1/P^s$** and we get this :

$$2 \Longleftrightarrow 1/P^s*(1/P^s*1/P^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + ...)$$

$$2 \Longleftrightarrow 1/P^s*1/P^s*1/P^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + ...$$

Then we get $2 \Longleftrightarrow 1/P^s*1/P^s*1/P^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n - 1/P^s - 1/P^{2s} - 1/P^{3s}$

As a result $2 \Longleftrightarrow 1/P^s*1/P^s*1/P^s.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n - (1/P^s + 1/P^{2s} + 1/P^{3s})$

We continue to repeat multiplying the result by **$1/P^s$** until the infinity and we get

$$*1/P^s*1/P^s*1/P^s*...\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n -(1/P^s+1/P^{2s} +1/P^{3s} +1/P^{4s}+1/P^{5s}+...)$$

we have $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = 1/P^s+1/P^{2s} +1/P^{3s} +1/P^{4s}+1/P^{5s} +1/P^{6s}+1/P^{7s}+ ....$

we replace the right side of the result by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n$ and we get this :

$$2 \Longleftrightarrow 1/P^s*1/P^s*1/P^s*.....\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n - \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n$$

As a result we get :

$$2 \Longleftrightarrow 1/P^s*1/P^s*1/P^s*.....\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = 0$$

We have as a previous result: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = 1/(P^s - 1) \neq 0$

Therefore: $\mathbf{1/P^s*1/P^s*1/P^s*}$ **....................................... = 0**

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/P^s$** by itself until the infinity, we get 0 zero as a result.

** Formula 33:

We have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^n = 1/P^s + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + ...$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(P)}^n$ by P^s until the infinity?

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1/P^{s} + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots\ldots\ldots$

$*P^{s}$ we are going to multiply P^{s} by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n}$ and we get as a result this :

$$3= P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 1+(1/P^{s} + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} +\ldots.)$$

$$3 \Longleftrightarrow P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - 1 = 1/P^{s} + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots\ldots$$

We continue repeating multiplying the result by $\mathbf{P^{s}}$ and we get this :

$$3 \Longleftrightarrow P^{s}*(P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - 1 = 1/P^{s} + 1/P^{2s} + 1/P^{3s} + 1/P^{4s} + 1/P^{5s} + 1/P^{6s} + 1/P^{7s} + \ldots)$$

$$3 \Longleftrightarrow P^{s}*P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - P^{s} =1+(1/P^{s} +1/P^{2s} +1/P^{3s} +1/P^{4s} +1/P^{5s} +1/P^{6s} +1/P^{7s} +\ldots)$$

$$3 \Longleftrightarrow P^{s}*P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(p)}^{n} - P^{s} - 1 = 1/P^{s} +1/P^{2s} +1/P^{3s} +1/P^{4s} +1/P^{5s} +1/P^{6s} +1/P^{7s} + \ldots$$

We continue repeating multiplying the result by $\mathbf{P^{s}}$ and we get this :

$$3 \Longleftrightarrow P^{s}*(P^{s}*P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - P^{s} - 1= 1/P^{s} +1/P^{2s} +1/P^{3s} +1/P^{4s} +1/P^{5s} + \ldots)$$

$$3\Longleftrightarrow P^{s}*P^{s}*P^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - P^{2s} - P^{s} = 1+(1/P^{s} +1/P^{2s} +1/P^{3s} +1/P^{4s} +1/P^{5s} +\ldots)$$

We continue to repeat multiplying the result by $\mathbf{P^{s}}$ until the infinity and we get :

$$3\Longleftrightarrow P^{s}*P^{s}*P^{s}*\ldots.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} - (P^{s}+P^{2s} +P^{3s} +P^{4s} +P^{5s} +\ldots)= 1+(1/P^{s}+1/P^{2s}+1/P^{3s}+1/P^{4s}+1/P^{5s}+ \ldots)$$

We have: $P^{s}*P^{s}*P^{s}*\ldots.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(P)}^{n} = 0$

Then the result will be:

$$3 \Longleftrightarrow - (P^{s}+P^{2s}+P^{3s}+P^{4s}+P^{5s}+ \ldots) =1+ (1/P^{s} +1/P^{2s} +1/P^{3s} +1/P^{4s} +1/P^{5s} +\ldots..)$$

$$3 \Longleftrightarrow(1/P^{s} +1/P^{2s} +1/P^{3s} +1/P^{4s} +1/P^{5s} +\ldots)+1+(P^{s}+P^{2s}+P^{3s}+P^{4s}+P^{5s}+ \ldots) = 0$$

$$3 \Longleftrightarrow (P^{-s}+P^{-2s}+P^{-3s}+P^{-4s}+P^{-5s}+P^{-6s}+P^{-7s}+ \ldots) + P^{0s}+ (P^{s}+P^{2s}+P^{3s}+P^{4s}+P^{5s} +P^{6s}+P^{7s}\ldots)= 0$$

Let $\sum_{n=1}^{+\infty} P^{ns} = P^{s}+P^{2s}+P^{3s}+P^{4s}+P^{5s} +P^{6s}+P^{7s} +\ldots\ldots\ldots$

And let $\sum_{n=-1}^{-\infty} P^{ns} = P^{-s}+P^{-2s}+P^{-3s}+P^{-4s}+P^{-5s}+P^{-6s}+P^{-7s}+\ldots\ldots.$

Then the result will be:

$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} P^{ns} + P^{0s} + \sum_{n=1}^{+\infty} P^{ns} = 0$

$3 \Longleftrightarrow \quad \sum_{n\in Z} P^{ns} = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 31 and Formula 33:

Since Formula 31 is equal to : $\sum_{n=-1}^{-\infty} 1/P^{ns} + 1/P^{0s} + \sum_{n=1}^{+\infty} 1/P^{ns} = 0$

And Formula 33 is equal to : $\sum_{n=-1}^{-\infty} P^{ns} + P^{0s} + \sum_{n=1}^{+\infty} P^{ns} = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/P^{ns} + 1/P^{0s} + \sum_{n=1}^{+\infty} 1/P^{ns} = \sum_{n=-1}^{-\infty} P^{ns} + P^{0s} + \sum_{n=1}^{+\infty} P^{ns} = 0$

$$\sum_{n\in Z} 1/P^{ns} = \sum_{n\in Z} P^{ns} = 0$$

** Formula 34:

6 is a product of the prime number 2 and the prime number 3, let 6 be the base of this following infinite series:

6 + 36 + 216 + 1296 + 7776 + 46656 +…………………

If we consider 6 as the base of this infinite series, we will get:

$6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots$

Let us denote this previous infinite series $6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots$ by $\sum_{n=1}^{\infty} (6)^n$

Then $6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots = \sum_{n=1}^{\infty} (6)^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty} (6)^n$

we have: $\sum_{n=1}^{\infty} (6)^n = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots$

*6 we are going to multiply 6 by $\sum_{n=1}^{\infty} (6)^n$ and we get as a result this :

$6.\sum_{n=1}^{\infty} (6)^n = 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots$

We have: $\sum_{n=1}^{\infty} (6)^n - 6 = 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots$

Let us replace $\sum_{n=1}^{\infty} (6)^n - 6$ its value and we get as a result this :

$1 = \quad 6.\sum_{n=1}^{\infty}(6)^n = \sum_{n=1}^{\infty}(6)^n - 6$

$1 \Longleftrightarrow 6.\sum_{n=1}^{\infty}(6)^n - \sum_{n=1}^{\infty}(6)^n = -6$

$1 \Longleftrightarrow 5.\sum_{n=1}^{\infty}(6)^n = -6$

$1 \Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}(6)^n = -6/5}$ and this formula is **Formula 34**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(6)^n$ by 6 until the infinity?

we multiply 6 by $\sum_{n=1}^{\infty}(6)^n$ and we get as a result this :

$6.\sum_{n=1}^{\infty}(6)^n = 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots\ldots$

Then $\quad 6.\sum_{n=1}^{\infty}(6)^n = \sum_{n=1}^{\infty}(6)^n - 6^1$

We are going to multiply again the result by 6 and we get this :

$\boxed{2 =} \quad 6.(6.\sum_{n=1}^{\infty}(6)^n = 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots\ldots)$

$2 \Longleftrightarrow 6.6.\sum_{n=1}^{\infty}(6)^n = 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 6.6.\sum_{n=1}^{\infty}(6)^n = \sum_{n=1}^{\infty}(6)^n - 6^1 - 6^2$

We continue repeating multiplying the result by 6 and we get this :

$2 \Longleftrightarrow 6.(6.6.\sum_{n=1}^{\infty}(6)^n = 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots\ldots)$

$2 \Longleftrightarrow 6.6.6.\sum_{n=1}^{\infty}(6)^n = 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get $2 \Longleftrightarrow 6.6.6.\sum_{n=1}^{\infty}(6)^n = \sum_{n=1}^{\infty}(6)^n - 6^1 - 6^2 - 6^3$

As a result $\quad 2 \Longleftrightarrow 6.6.6.\sum_{n=1}^{\infty}(6)^n = \sum_{n=1}^{\infty}(6)^n - (6^1 + 6^2 + 6^3)$

We continue to repeat multiplying the result by 6 until the infinity and we get :

$6*6*6*\ldots\ldots\sum_{n=1}^{\infty}(6)^n = \sum_{n=1}^{\infty}(6)^n - (6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots\ldots)$

we have $\sum_{n=1}^{\infty}(6)^n = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}(6)^n$ and we get this :

$2 \Longleftrightarrow 6*6*6*\ldots\ldots\sum_{n=1}^{\infty}(6)^n = \sum_{n=1}^{\infty}(6)^n - \sum_{n=1}^{\infty}(6)^n$

As a result we get :

$2 \Longleftrightarrow 6*6*6*\ldots\ldots\sum_{n=1}^{\infty}(6)^n = 0$

We have as a previous result: $\sum_{n=1}^{\infty}(6)^n = -6/5$

Therefore: **6*6*6*...................................... = 0**

Using **theorem and notion 1 of Zero** that states if we multiply a number 6 by itself until the infinity, we get 0 zero as a result.

** Formula 35:

We have: $\sum_{n=1}^{\infty}(6)^n = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(6)^n$ by 1/6 until the infinity?</u>

we have: $\sum_{n=1}^{\infty}(6)^n = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots$

*1/6 we are going to multiply 1/6 by $\sum_{n=1}^{\infty}(6)^n$ and we get as a result this :

$3{=}\ 1/6.\sum_{n=1}^{\infty}(6)^n = 1+ (6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots)$

$3 \Longleftrightarrow 1/6.\sum_{n=1}^{\infty}(6)^n - 1 = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/6 and we get this :

$3 \Longleftrightarrow 1/6{*}(1/6.\sum_{n=1}^{\infty}(6)^n - 1 = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots)$

$3 \Longleftrightarrow 1/6{*}1/6.\sum_{n=1}^{\infty}(6)^n - 1/6^1 = 1+(6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots)$

$3 \Longleftrightarrow 1/6{*}1/6.\sum_{n=1}^{\infty}(6)^n - 1/6^1 - 1 = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/6 and we get this :

$3 \Longleftrightarrow 1/6{*}(1/6{*}1/6.\sum_{n=1}^{\infty}(6)^n - 1/6^1 - 1 = 6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots\ldots)$

$3 \Longleftrightarrow 1/6{*}1/6{*}1/6.\sum_{n=1}^{\infty}(6)^n - 1/6^2 - 1/6^1 = 1+(6^1 + 6^2 + 6^3 + 6^4 + 6^5 + 6^6 + 6^7 + \ldots)$

We continue to repeat multiplying the result by 1/6 until the infinity and we get

$3 \Longleftrightarrow 1/6{*}1/6{*}1/6{*}\ldots.\sum_{n=1}^{\infty}(6)^n - (1/6^1+1/6^2 +1/6^3 +1/6^4 +1/6^5 +\ldots)= 1+(6^1+6^2+6^3+6^4+6^5+6^6+6^7+ \ldots)$

We have: $1/6{*}1/6{*}1/6{*}\ldots.\sum_{n=1}^{\infty}(6)^n = 0$

We are going to prove this result later on

Then the result will be:

$3 \Longleftrightarrow -(1/6^1+1/6^2+1/6^3+1/6^4+1/6^5 +1/6^6+ 1/6^7+\ldots)=1+(6^1+6^2+6^3+6^4+6^5+6^6+6^7+\ldots)$

$3 \Longleftrightarrow (6^1+6^2+6^3+6^4+6^5+6^6+6^7+\ldots)+1+(1/6^1+1/6^2+1/6^3+1/6^4+1/6^5+1/6^6+1/6^7+\ldots)= 0$

$3 \Longleftrightarrow (1/6^{-1}+1/6^{-2}+1/6^{-3}+1/6^{-4}+1/6^{-5}+1/6^{-6}+1/6^{-7}+\ldots)+1/6^0+(1/6^1+1/6^2+1/6^3+1/6^4+1/6^5+1/6^6+1/6^7\ldots)= 0$

Let $\sum_{n=1}^{+\infty} 1/6^n = 1/6^1+1/6^2+1/6^3+1/6^4+1/6^5+1/6^6+1/6^7+\ldots$

And let $\sum_{n=-1}^{-\infty} 1/6^n = 1/6^{-1}+1/6^{-2}+1/6^{-3}+1/6^{-4}+1/6^{-5}+1/6^{-6}+1/6^{-7}+\ldots\ldots\ldots\ldots$

Then the result will be:

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 1/6^n + 1/6^0 + \sum_{n=1}^{+\infty} 1/6^n = 0$$

$$3 \Longleftrightarrow \sum_{n\in Z} 1/6^n = 0$$

At modern and new mathematics, and depending on the **theorem anf notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 36:

6 is a product of 2 prime numbers 2 and 3 , let 6 be the base of this following infinite series:

1/6 + 1/36 + 1/216 + 1/1296 + 1/7776 + 1/46656 +…………………

If we consider 6 as the base of this infinite series, we will get:

$1/6 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/6 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots$ by $\sum_{n=1}^{\infty}\overline{(6)}^n$

Then $1/6 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots = \sum_{n=1}^{\infty}\overline{(6)}^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{(6)}^n$

we have: $\sum_{n=1}^{\infty}\overline{(6)}^n = 1/6 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7+ \ldots\ldots\ldots\ldots$

*1/6 we are going to multiply 1/6 by $\sum_{n=1}^{\infty}\overline{(6)}^n$ and we get as a result this :

$1/6.\sum_{n=1}^{\infty}\overline{(6)}^n = 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots\ldots$

We have: $\sum_{n=1}^{\infty}\overline{(6)}^n - 1/6 = 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}\overline{(6)}^n - 1/6$ its value and we get as a result this :

$$1= \quad 1/6.\sum_{n=1}^{\infty}\overline{(6)}^n = \sum_{n=1}^{\infty}\overline{(6)}^n - 1/6$$

$$1 \Longleftrightarrow 1/6.\sum_{n=1}^{\infty}\overline{(6)}^n - \sum_{n=1}^{\infty}\overline{(6)}^n = -1/6$$

$1 \Longleftrightarrow (1/6 - 1).\sum_{n=1}^{\infty}\overline{(6)}^{n} = -1/6$

$1 \Longleftrightarrow ((1\text{-}6)/6).\sum_{n=1}^{\infty}\overline{(6)}^{n} = -1/6$

$1 \Longleftrightarrow ((6\text{-}1)/6).\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6$

$1 \Longleftrightarrow (5/6).\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6$

$1 \Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/5}$ and this formula is **Formula 36**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(6)}^{n}$ by 1/6 until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots$

we multiply 1/6 by $\sum_{n=1}^{\infty}\overline{(6)}^{n}$ and we get as a result this :

$$1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots\ldots$$

Then $1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = \sum_{n=1}^{\infty}\overline{(6)}^{n} - 1/6^1$

We are going to multiply again the result by 1/6 and we get this :

$$\boxed{2 =}\ 1/6.(1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/6*1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/6*1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = \sum_{n=1}^{\infty}\overline{(6)}^{n} - 1/6^1 - 1/6^2$

We continue repeating multiplying the result by 1/6 and we get this :

$$2 \Longleftrightarrow 1/6*(1/6*1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/6*1/6*1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/6*1/6*1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = \sum_{n=1}^{\infty}\overline{(6)}^{n} - 1/6^1 - 1/6^2 - 1/6^3$

As a result $2 \Longleftrightarrow 1/6*1/6*1/6.\sum_{n=1}^{\infty}\overline{(6)}^{n} = \sum_{n=1}^{\infty}\overline{(6)}^{n} - (1/6^1 + 1/6^2 + 1/6^3)$

We continue to repeat multiplying the result by 1/6 until the infinity and we get

$$*1/6*1/6*1/6*\ldots\sum_{n=1}^{\infty}\overline{(6)}^{n} = \sum_{n=1}^{\infty}\overline{(6)}^{n} - (1/6^1+1/6^2+1/6^3+1/6^4+1/6^5+1/6^6+1/6^7+\ldots)$$

we have $\sum_{n=1}^{\infty}\overline{(6)}^{n} = 1/6^1+1/6^2+1/6^3+1/6^4+1/6^5+1/6^6+1/6^7 + \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}\overline{(6)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/6*1/6*1/6*.....\sum_{n=1}^{\infty}\overline{(6)}^n = \sum_{n=1}^{\infty}\overline{(6)}^n - \sum_{n=1}^{\infty}\overline{(6)}^n$$

As a result we get :

$$2 \Longleftrightarrow 1/6*1/6*1/6*.....\sum_{n=1}^{\infty}\overline{(6)}^n = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}\overline{(6)}^n = 1/5$

Therefore: **1/6*1/6*1/6*... = 0**

Using **theorem and notion 1 of Zero** that states if we multiply a number 1/6 by itself until the infinity, we get 0 zero as a result.

** Formula 37:

We have: $\sum_{n=1}^{\infty}\overline{(6)}^n = 1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(6)}^n$ by 6 until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(6)}^n = 1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...$

*6 we are going to multiply 6 by $\sum_{n=1}^{\infty}\overline{(6)}^n$ and we get as a result this :

$$3 = 6.\sum_{n=1}^{\infty}\overline{(6)}^n = 1 + (1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...)$$

$$3 \Longleftrightarrow 6.\sum_{n=1}^{\infty}\overline{(6)}^n - 1 = 1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...$$

We continue repeating multiplying the result by 6 and we get this :

$$3 \Longleftrightarrow 6*(6.\sum_{n=1}^{\infty}\overline{(6)}^n - 1 = 1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...)$$

$$3 \Longleftrightarrow 6*6.\sum_{n=1}^{\infty}\overline{(6)}^n - 6^1 = 1 + (1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...)$$

$$3 \Longleftrightarrow 6*6.\sum_{n=1}^{\infty}\overline{(6)}^n - 6^1 - 1 = 1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...$$

We continue repeating multiplying the result by 6 and we get this :

$$3 \Longleftrightarrow 6*(6*6.\sum_{n=1}^{\infty}\overline{(6)}^n - 6^1 - 1 = 1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...)$$

$$3 \Longleftrightarrow 6*6*6.\sum_{n=1}^{\infty}\overline{(6)}^n - 6^2 - 6^1 = 1 + (1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...)$$

We continue to repeat multiplying the result by 6 until the infinity and we get :

$$3 \Longleftrightarrow 6*6*6*....\sum_{n=1}^{\infty}\overline{(6)}^n - (6^1 + 6^2 + 6^3 + 6^4 + 6^5 + ...) = 1 + (1/6^1 + 1/6^2 + 1/6^3 + 1/6^4 + 1/6^5 + 1/6^6 + 1/6^7 + ...)$$

We have: $6*6*6*....\sum_{n=1}^{\infty}\overline{(6)}^n = 0$

Then the result will be:

$3 \Longleftrightarrow -(6^1+6^2+6^3+6^4+6^5+6^6+6^7+\ldots) = 1+(1/6^1+1/6^2+1/6^3+1/6^4+1/6^5+1/6^6+1/6^7\ldots)$

$3 \Longleftrightarrow (1/6^1+1/6^2+1/6^3+1/6^4+1/6^5+1/6^6+1/6^7+\ldots)+1+(6^1+6^2+6^3+6^4+6^5+6^6+6^7+\ldots) = 0$

$3 \Longleftrightarrow (6^{-1}+6^{-2}+6^{-3}+6^{-4}+6^{-5}+6^{-6}+6^{-7}+\ldots) + 6^0 + (6^1+6^2+6^3+6^4+6^5+6^6+6^7\ldots) = 0$

Let $\sum_{n=1}^{\infty} 6^n = 6^1+6^2+6^3+6^4+6^5+6^6+6^7+\ldots\ldots\ldots$

And let $\sum_{n=-1}^{-\infty} 6^n = 6^{-1}+6^{-2}+6^{-3}+6^{-4}+6^{-5}+6^{-6}+6^{-7}+\ldots\ldots.$

Then the result will be:

$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 6^n + 6^0 + \sum_{n=1}^{+\infty} 6^n = 0$

$3 \Longleftrightarrow \quad \sum_{n\in Z} 6^n = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 35 and Formula 37:

Since Formula 35 is equal to : $\sum_{n=-1}^{-\infty} 1/6^n + 1/6^0 + \sum_{n=1}^{+\infty} 1/6^n = 0$

And Formula 37 is equal to : $\sum_{n=-1}^{-\infty} 6^n + 6^0 + \sum_{n=1}^{+\infty} 6^n = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/6^n + 1/6^0 + \sum_{n=1}^{+\infty} 1/6^n = \sum_{n=-1}^{-\infty} 6^n + 6^0 + \sum_{n=1}^{+\infty} 6^n = 0$

$$\sum_{n\in Z} 1/6^n = \sum_{n\in Z} 6^n = 0$$

** Formula 38:

15 is a product of the prime number 5 and the prime number 3, let 15 be the base of this following infinite series:

15 + 225 + 3375 + 50625+ 759375 +…………………

If we consider 15 as the base of this infinite series, we will get:

$15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots$ by $\sum_{n=1}^{\infty}(15)^n$

Then $15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots = \sum_{n=1}^{\infty}(15)^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(15)^n$

we have: $\sum_{n=1}^{\infty}(15)^n = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots$

*15 we are going to multiply 15 by $\sum_{n=1}^{\infty}(15)^n$ and we get as a result this :

$15.\sum_{n=1}^{\infty}(15)^n = 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots$

We have: $\sum_{n=1}^{\infty}(15)^n - 15 = 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}(15)^n - 15$ its value and we get as a result this :

1= $15.\sum_{n=1}^{\infty}(15)^n = \sum_{n=1}^{\infty}(15)^n - 15$

1 $\Longleftrightarrow$ $15.\sum_{n=1}^{\infty}(15)^n$ - $\sum_{n=1}^{\infty}(15)^n = -15$

1 $\Longleftrightarrow$ $14.\sum_{n=1}^{\infty}(15)^n = -15$

1 $\Longleftrightarrow$ $\boldsymbol{\sum_{n=1}^{\infty}(15)^n = -15/14}$ and this formula is **Formula 38**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(15)^n$ by 15 until the infinity?</u>

we multiply 15 by $\sum_{n=1}^{\infty}(15)^n$ and we get as a result this :

$15.\sum_{n=1}^{\infty}(15)^n = 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots$

Then $15.\sum_{n=1}^{\infty}(15)^n = \sum_{n=1}^{\infty}(15)^n - 15^1$

We are going to multiply again the result by 15 and we get this :

2 = $15.(15.\sum_{n=1}^{\infty}(15)^n = 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots)$

2 $\Longleftrightarrow$ $15.15.\sum_{n=1}^{\infty}(15)^n = 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get 2 $\Longleftrightarrow$ $15.15.\sum_{n=1}^{\infty}(15)^n = \sum_{n=1}^{\infty}(15)^n - 15^1 - 15^2$

We continue repeating multiplying the result by 15 and we get this :

2 $\Longleftrightarrow$ $15.(15.15.\sum_{n=1}^{\infty}(15)^n = 15^3 + 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots)$

2 $\Longleftrightarrow$ $15.15.15.\sum_{n=1}^{\infty}(15)^n = 15^4 + 15^5 + 15^6 + 15^7 + \ldots\ldots\ldots\ldots\ldots$

Then we get 2 $\Longleftrightarrow$ $15.15.15.\sum_{n=1}^{\infty}(15)^n = \sum_{n=1}^{\infty}(15)^n - 15^1 - 15^2 - 15^3$

As a result 2 $\Longleftrightarrow$ $15.15.15.\sum_{n=1}^{\infty}(15)^n = \sum_{n=1}^{\infty}(15)^n - (15^1 + 15^2 + 15^3)$

We continue to repeat multiplying the result by 15 until the infinity and we get :

15*15*15*.....$\sum_{n=1}^{\infty}(15)^n = \sum_{n=1}^{\infty}(15)^n$ - ($15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7$ +...)

we have $\sum_{n=1}^{\infty}(15)^n = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7$ ....

we replace the right side of the result by $\sum_{n=1}^{\infty}(15)^n$ and we get this :

2 $\Longleftrightarrow$ 15*15*15*.....$\sum_{n=1}^{\infty}(15)^n = \sum_{n=1}^{\infty}(15)^n - \sum_{n=1}^{\infty}(15)^n$

As a result we get :

2 $\Longleftrightarrow$ 15*15*15*.....$\sum_{n=1}^{\infty}(15)^n = 0$

We have as a previous result: $\sum_{n=1}^{\infty}(15)^n = -15/14$

Therefore: **15*15*15*.. = 0**

Using **theorem and notion 1 of Zero** that states if we multiply a number 15 by itself until the infinity, we get 0 zero as a result.

** Formula 39:

We have: $\sum_{n=1}^{\infty}(15)^n = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$ ....

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(15)^n$ by 1/15 until the infinity?

we have: $\sum_{n=1}^{\infty}(15)^n = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$ ....

*1/15 we are going to multiply 1/15 by $\sum_{n=1}^{\infty}(15)^n$ and we get as a result this :

3= 1/15.$\sum_{n=1}^{\infty}(15)^n = 1 + (15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$ ....)

3 $\Longleftrightarrow$ 1/15.$\sum_{n=1}^{\infty}(15)^n - 1 = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$..............

We continue repeating multiplying the result by 1/15 and we get this :

3 $\Longleftrightarrow$ 1/15*(1/15.$\sum_{n=1}^{\infty}(15)^n - 1 = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$......)

3 $\Longleftrightarrow$ 1/15*1/15.$\sum_{n=1}^{\infty}(15)^n - 1/15^1 = 1 + (15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$ ...)

3 $\Longleftrightarrow$ 1/15*1/15.$\sum_{n=1}^{\infty}(15)^n - 1/15^1 - 1 = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$......

We continue repeating multiplying the result by 1/15 and we get this :

3$\Leftrightarrow$1/15*(1/15*1/15.$\sum_{n=1}^{\infty}(15)^n - 1/15^1 - 1 = 15^1 + 15^2 + 15^3 + 15^4 + 15^5 + 15^6 + 15^7 +$...)

3$\Leftrightarrow$1/15*1/15*1/15.$\sum_{n=1}^{\infty}(15)^n - 1/15^2 - 1/15^1 = 1 + (15^1 + 15^2 + 15^3 + 15^4 + 15^5 +$...)

We continue to repeat multiplying the result by 1/15 until the infinity and we get

$3 \Leftrightarrow 1/15*1/15*1/15*...\sum_{n=1}^{\infty}(15)^n-(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+...)=1+(15^1+15^2+15^3+15^4+15^5+ ...)$

We have: $1/15*1/15*1/15*....\sum_{n=1}^{\infty}(15)^n = 0$

We are going to prove this result later on

Then the result will be:

$$3 \Longleftrightarrow -(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+...)=1+(15^1+15^2+15^3+15^4+15^5+...)$$

$$3 \Longleftrightarrow (15^1+15^2+15^3+15^4+15^5+...)+1+(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+...)= 0$$

$$3 \Longleftrightarrow (1/15^{-1}+1/15^{-2}+1/15^{-3}+1/15^{-4}+1/15^{-5}+ ...)+1/15^0+(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+...)= 0$$

Let $\sum_{n=1}^{+\infty} 1/15^n = 1/15^1+1/15^2+1/15^3+1/15^4+1/15^5 +1/15^6+ 1/15^7+...$

And let $\sum_{n=-1}^{-\infty} 1/15^n = 1/15^{-1}+1/15^{-2}+1/15^{-3}+1/15^{-4}+1/15^{-5}+1/15^{-6}+1/15^{-7} +........$

Then the result will be:

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 1/15^n + 1/15^0 + \sum_{n=1}^{+\infty} 1/15^n = 0$$

$$3 \Longleftrightarrow \sum_{n \in Z} 1/15^n = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 40:

15 is a product of 2 prime numbers, 5 and 3 , let 15 be the base of this following infinite series:

1/15 + 1/225 + 1/3375 + 1/50625 + 1/759375 +....................

If we consider 15 as the base of this infinite series, we will get:

$1/15^1 + 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 +$ ....

Let us denote this previous infinite series $1/15^1 +1/15^2 +1/15^3 +1/15^4 +1/15^5 +1/15^6 +1/15^7 +...$ by $\sum_{n=1}^{\infty}\overline{(15)}^n$

Then $1/15^1 + 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 .... = \sum_{n=1}^{\infty}\overline{(15)}^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{(15)}^n$

we have: $\sum_{n=1}^{\infty}\overline{(15)}^n = 1/15^1 + 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 + ...$

*1/15 we are going to multiply $1/15$ by $\sum_{n=1}^{\infty}\overline{(15)}^n$ and we get as a result this :

$$1/15.\sum_{n=1}^{\infty}\overline{(15)}^n = 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 + ...$$

We have: $\sum_{n=1}^{\infty}\overline{(15)}^{n} - 1/15 = 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 + ...$

Let us replace $\sum_{n=1}^{\infty}\overline{(15)}^{n} - 1/15$ its value and we get as a result this :

$$1= \quad 1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = \sum_{n=1}^{\infty}\overline{(15)}^{n} - 1/15$$

$$1 \Longleftrightarrow 1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} - \sum_{n=1}^{\infty}\overline{(15)}^{n} = -1/15$$

$$1 \Longleftrightarrow (1/15 - 1).\sum_{n=1}^{\infty}\overline{(15)}^{n} = -1/15$$

$$1 \Longleftrightarrow ((1-15)/15).\sum_{n=1}^{\infty}\overline{(15)}^{n} = -1/15$$

$$1 \Longleftrightarrow ((15-1)/15).\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15$$

$$1 \Longleftrightarrow (14/15).\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15$$

$1 \Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/14}$ and this formula is **Formula 40**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(15)}^{n}$ by 1/15 until the infinity?</u>

we have: $\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^1 + 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 + ...$

we multiply 1/15 by $\sum_{n=1}^{\infty}\overline{(15)}^{n}$ and we get as a result this :

$$1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 + ...$$

Then $1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = \sum_{n=1}^{\infty}\overline{(15)}^{n} - 1/15^1$

We are going to multiply again the result by 1/15 and we get this :

$\boxed{2 =}$ $1/15.(1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 +......)$

$$2 \Longleftrightarrow 1/15*1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 + ...$$

Then we get $2 \Longleftrightarrow 1/15*1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = \sum_{n=1}^{\infty}\overline{(15)}^{n} - 1/15^1 - 1/15^2$

We continue repeating multiplying the result by 1/15 and we get this :

$$2 \Longleftrightarrow 1/15*(1/15*1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7+...)$$

$$2 \Longleftrightarrow 1/15*1/15*1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7+ ....$$

Then we get $2 \Longleftrightarrow 1/15*1/15*1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = \sum_{n=1}^{\infty}\overline{(15)}^{n} - 1/15^1 - 1/15^2 - 1/15^3$

As a result $2 \Longleftrightarrow 1/15*1/15*1/15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = \sum_{n=1}^{\infty}\overline{(15)}^{n} - (1/15^1 + 1/15^2 + 1/15^3)$

We continue to repeat multiplying the result by 1/15 until the infinity and we get

$$*1/15*1/15*1/15*\ldots\sum_{n=1}^{\infty}\overline{(15)}^{n}=\sum_{n=1}^{\infty}\overline{(15)}^{n}-(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+\ldots)$$

we have $\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+1/15^6+1/15^7+\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}\overline{(15)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/15*1/15*1/15*\ldots\ldots\sum_{n=1}^{\infty}\overline{(15)}^{n} = \sum_{n=1}^{\infty}\overline{(15)}^{n} - \sum_{n=1}^{\infty}\overline{(15)}^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/15*1/15*1/15*\ldots\ldots\sum_{n=1}^{\infty}\overline{(15)}^{n} = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/14$

Therefore: $\mathbf{1/15*1/15*1/15*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number 1/15 by itself until the infinity, we get 0 zero as a result.

** Formula 41:

We have: $\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^1 + 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + 1/15^6 + 1/15^7 + \ldots\ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(15)}^{n}$ by 15 until the infinity?</u>

we have: $\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+1/15^6+1/15^7+\ldots$

*15 we are going to multiply 15 by $\sum_{n=1}^{\infty}\overline{(15)}^{n}$ and we get as a result this :

$$3 = 15.\sum_{n=1}^{\infty}\overline{(15)}^{n} = 1+(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+1/15^6+1/15^7+\ldots.)$$

$$3 \Longleftrightarrow 15.\sum_{n=1}^{\infty}\overline{(15)}^{n} - 1 = 1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+1/15^6+1/15^7+\ldots\ldots\ldots$$

We continue repeating multiplying the result by 15 and we get this :

$$3 \Leftrightarrow 15*(15.\sum_{n=1}^{\infty}\overline{(15)}^{n} - 1 = 1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+1/15^6+1/15^7+\ldots\ldots\ldots)$$

$$3 \Leftrightarrow 15*15.\sum_{n=1}^{\infty}\overline{(15)}^{n} - 15^1 = 1+(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+\ldots\ldots)$$

$$3 \Leftrightarrow 15*15.\sum_{n=1}^{\infty}\overline{(15)}^{n} - 15^1 - 1 = 1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+\ldots\ldots$$

We continue repeating multiplying the result by 15 and we get this :

$$3 \Longleftrightarrow 15*(15*15.\sum_{n=1}^{\infty}\overline{(15)}^{n} - 15^1 - 1 = 1/15^1 + 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5 + \ldots)$$

$3 \Longleftrightarrow 15*15*15.\sum_{n=1}^{\infty}\overline{(15)}^n - 15^2 - 15^1 = 1+(1/15^1 + 1/15^2 + 1/15^3 + 1/15^4 + 1/15^5+...)$

We continue to repeat multiplying the result by 15 until the infinity and we get :

$3 \Longleftrightarrow 15*15*15*...\sum_{n=1}^{\infty}\overline{(15)}^n - (15^1+15^2+15^3+15^4+15^5+...) = 1+(1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+...)$

We have: $15*15*15*....\sum_{n=1}^{\infty}\overline{(15)}^n = 0$

Then the result will be:

$3 \Longleftrightarrow -(15^1+15^2+15^3+15^4+15^5+ ...) = 1+ (1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+...)$

$3 \Longleftrightarrow (1/15^1+1/15^2+1/15^3+1/15^4+1/15^5+...)+1+(15^1+15^2+15^3+15^4+15^5+ ...) = 0$

$3 \Longleftrightarrow (15^{-1}+15^{-2}+15^{-3}+15^{-4}+15^{-5}+ ...) + 15^0+ (15^1+15^2+15^3+15^4+15^5+...)= 0$

Let $\sum_{n=1}^{+\infty} 15^n = 15^1+15^2+15^3+15^4+15^5+15^6+15^7+.........$

And let $\sum_{n=-1}^{-\infty} 15^n = 15^{-1}+15^{-2}+15^{-3}+15^{-4}+15^{-5}+15^{-6}+15^{-7}+.......$

Then the result will be:

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 15^n + 15^0 + \sum_{n=1}^{+\infty} 15^n = 0$

$3 \Longleftrightarrow \sum_{n\in Z} 15^n = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 39 and Formula 41:

Since Formula 39 is equal to : $\sum_{n=-1}^{-\infty} 1/15^n + 1/15^0 + \sum_{n=1}^{+\infty} 1/15^n = 0$

And Formula 41 is equal to : $\sum_{n=-1}^{-\infty} 15^n + 15^0 + \sum_{n=1}^{+\infty} 15^n = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/15^n + 1/15^0 + \sum_{n=1}^{+\infty} 1/15^n = \sum_{n=-1}^{-\infty} 15^n + 15^0 + \sum_{n=1}^{+\infty} 15^n = 0$

$$\boldsymbol{\sum_{n\in Z} 1/15^n = \sum_{n\in Z} 15^n = 0}$$

** Formula 42:

$\prod p$ is a product of the prime numbers and these prime numbers can contain the prime number 2,

let $\prod p$ be the base of this following infinite series:

$\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots$ by $\sum_{n=1}^{\infty}(\prod p)^n$

Then $\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots = \sum_{n=1}^{\infty}(\prod p)^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(\prod p)^n$

we have: $\sum_{n=1}^{\infty}(\prod p)^n = \prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots$

$*\prod p$ we are going to multiply $\prod p$ by $\sum_{n=1}^{\infty}(\prod p)^n$ and we get as a result this :

$\prod p.\sum_{n=1}^{\infty}(\prod p)^n = \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots$

We have: $\sum_{n=1}^{\infty}(\prod p)^n - \prod p = \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}(\prod p)^n - \prod p$ its value and we get as a result this :

$$1 = \quad \prod p.\sum_{n=1}^{\infty}(\prod p)^n = \sum_{n=1}^{\infty}(\prod p)^n - \prod p$$

$$1 \Longleftrightarrow \prod p.\sum_{n=1}^{\infty}(\prod p)^n - \sum_{n=1}^{\infty}(\prod p)^n = -\prod p$$

$$1 \Longleftrightarrow (\prod p - 1).\sum_{n=1}^{\infty}(\prod p)^n = -\prod p$$

$1 \Longleftrightarrow$ $\boldsymbol{\sum_{n=1}^{\infty}(\prod p)^n = -\prod p\,/(\prod p - 1)}$ and this formula is **Formula 42**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(\prod p)^n$ by $\prod p$ until the infinity?</u>

we multiply by $\sum_{n=1}^{\infty}(\prod p)^n$ and we get as a result this :

$$\prod p.\sum_{n=1}^{\infty}(\prod p)^n = \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots$$

Then $\prod p.\sum_{n=1}^{\infty}(\prod p)^n = \sum_{n=1}^{\infty}(\prod p)^n - \prod p^1$

We are going to multiply again the result by $\prod p$ and we get this :

$$\boxed{2 =} \quad \prod p.(\prod p.\sum_{n=1}^{\infty}(\prod p)^n = \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \prod p.\prod p.\sum_{n=1}^{\infty}(\prod p)^n = \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow \prod p.\prod p.\sum_{n=1}^{\infty}(\prod p)^n = \sum_{n=1}^{\infty}(\prod p)^n - \prod p^1 - \prod p^2$

We continue repeating multiplying the result by $\prod p$ and we get this :

$$2 \Longleftrightarrow \Pi p.(\Pi p.\,\Pi p.\sum_{n=1}^{\infty}(\Pi p)^n = \Pi p^3 + \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \Pi p.\,\Pi p.\,\Pi p.\sum_{n=1}^{\infty}(\Pi p)^n = \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow \Pi p.\,\Pi p.\,\Pi p.\sum_{n=1}^{\infty}(\Pi p)^n = \sum_{n=1}^{\infty}(\Pi p)^n - \Pi p^1 - \Pi p^2 - \Pi p^3$

As a result $2 \Longleftrightarrow \Pi p.\,\Pi p.\,\Pi p.\sum_{n=1}^{\infty}(\Pi p)^n = \sum_{n=1}^{\infty}(\Pi p)^n - (\Pi p^1 + \Pi p^2 + \Pi p^3)$

We continue to repeat multiplying the result by **Πp** until the infinity and we get :

$$\Pi p * \Pi p * \Pi p * \ldots \sum_{n=1}^{\infty}(\Pi p)^n = \sum_{n=1}^{\infty}(\Pi p)^n - (\Pi p^1 + \Pi p^2 + \Pi p^3 + \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 + \ldots)$$

we have $\sum_{n=1}^{\infty}(\Pi p)^n = \Pi p^1 + \Pi p^2 + \Pi p^3 + \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 \ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}(\Pi p)^n$ and we get this :

$$2 \Longleftrightarrow \Pi p * \Pi p * \Pi p * \ldots\ldots \sum_{n=1}^{\infty}(\Pi p)^n = \sum_{n=1}^{\infty}(\Pi p)^n - \sum_{n=1}^{\infty}(\Pi p)^n$$

As a result we get :

$$2 \Longleftrightarrow \Pi p * \Pi p * \Pi p * \ldots\ldots \sum_{n=1}^{\infty}(\Pi p)^n = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}(\Pi p)^n = -\Pi p/(\Pi p - 1) \neq 0$

Therefore: **$\Pi p * \Pi p * \Pi p * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$**

Using **theorem and notion 1 of Zero** that states if we multiply a number **Πp** by itself until the infinity, we get 0 zero as a result.

** Formula 43:

We have: $\sum_{n=1}^{\infty}(\Pi p)^n = \Pi p^1 + \Pi p^2 + \Pi p^3 + \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 + \ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(\Pi p)^n$ by 1/∏p until the infinity?

we have: $\sum_{n=1}^{\infty}(\Pi p)^n = \Pi p^1 + \Pi p^2 + \Pi p^3 + \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 + \ldots\ldots\ldots\ldots$

$*1/\Pi p$ we are going to multiply $1/\Pi p$ by $\sum_{n=1}^{\infty}(\Pi p)^n$ and we get as a result this :

$$3 = 1/\Pi p.\sum_{n=1}^{\infty}(\Pi p)^n = 1 + (\Pi p^1 + \Pi p^2 + \Pi p^3 + \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 + \ldots\ldots)$$

$$3 \Longleftrightarrow 1/\Pi p.\sum_{n=1}^{\infty}(\Pi p)^n - 1 = \Pi p^1 + \Pi p^2 + \Pi p^3 + \Pi p^4 + \Pi p^5 + \Pi p^6 + \Pi p^7 + \ldots\ldots\ldots\ldots$$

We continue repeating multiplying the result by **1/∏p** and we get this :

$3 \Longleftrightarrow 1/\prod p *(1/\prod p.\sum_{n=1}^{\infty}(\prod p)^n - 1 = \prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + ...)$

$3 \Leftrightarrow 1/\prod p *1/\prod p.\sum_{n=1}^{\infty}(\prod p)^n - 1/\prod p^1 = 1+(\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + ...)$

$3 \Leftrightarrow 1/\prod p *1/\prod p.\sum_{n=1}^{\infty}(\prod p)^n - 1/\prod p^1 - 1 = \prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + ...$

We continue repeating multiplying the result by **1/∏p** and we get this :

$3 \Leftrightarrow 1/\prod p *(1/\prod p *1/\prod p.\sum_{n=1}^{\infty}(\prod p)^n - 1/\prod p^1 - 1 = \prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + ...)$

$3 \Leftrightarrow 1/\prod p *1/\prod p *1/\prod p.\sum_{n=1}^{\infty}(\prod p)^n - 1/\prod p^2 - 1/\prod p^1 = 1+(\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + ...)$

We continue to repeat multiplying the result by **1/∏p** until the infinity and we get

$3 \Leftrightarrow 1/\prod p *1/\prod p *1/\prod p *...\sum_{n=1}^{\infty}(\prod p)^n - (1/\prod p^1 + 1/\prod p^2 + 1/\prod p^3 + 1/\prod p^4 + 1/\prod p^5 + ...) = 1+(\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + ...)$

We have: $1/\prod p *1/\prod p *1/\prod p *....\sum_{n=1}^{\infty}(\prod p)^n = 0$

We are going to prove this result later on

Then the result will be:

$3 \Longleftrightarrow -(1/\prod p^1 + 1/\prod p^2 + 1/\prod p^3 + 1/\prod p^4 + 1/\prod p^5 + ...) = 1+(\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + ...)$

$3 \Longleftrightarrow (\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + ...)+1+(1/\prod p^1 + 1/\prod p^2 + 1/\prod p^3 + 1/\prod p^4 + 1/\prod p^5 + ...) = 0$

$3 \Leftrightarrow (1/\prod p^{-1} + 1/\prod p^{-2} + 1/\prod p^{-3} + 1/\prod p^{-4} + 1/\prod p^{-5} + ...) + 1/\prod p^0 + (1/\prod p^1 + 1/\prod p^2 + 1/\prod p^3 + 1/\prod p^4 + 1/\prod p^5 + ...) = 0$

Let $\sum_{n=1}^{+\infty} 1/\prod p^n = 1/\prod p^1 + 1/\prod p^2 + 1/\prod p^3 + 1/\prod p^4 + 1/\prod p^5 + 1/\prod p^6 + 1/\prod p^7 + ...$

And let $\sum_{n=-1}^{-\infty} 1/\prod p^n = 1/\prod p^{-1} + 1/\prod p^{-2} + 1/\prod p^{-3} + 1/\prod p^{-4} + 1/\prod p^{-5} + 1/\prod p^{-6} + 1/\prod p^{-7} + ...$

Then the result will be:

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 1/\prod p^n + 1/\prod p^0 + \sum_{n=1}^{+\infty} 1/\prod p^n = 0$$

$$3 \Longleftrightarrow \sum_{n \in Z} 1/\prod p^n = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 44:

$\prod p$ is a product of the prime numbers and these prime numbers can contain the prime number 2,

let $\prod p$ be the base of this following infinite series:

$1/\prod p^1 + 1/\prod p^2 + 1/\prod p^3 + 1/\prod p^4 + 1/\prod p^5 + 1/\prod p^6 + 1/\prod p^7 + ...$

Let us denote this previous infinite series $1/\prod p^{1} + 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + \ldots\ldots\ldots$ by $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n}$

Then $1/\prod p^{1} + 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} \ldots\ldots\ldots = \sum_{n=1}^{\infty}\overline{(\prod p)}^{n}$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n}$

we have: $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1/\prod p^{1} + 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} + \ldots\ldots$

$*1/\prod p$ we are going to multiply $1/\prod p$ by $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n}$ and we get as a result this :

$$1\prod p\ /.\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} + \ldots\ldots\ldots$$

We have: $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} - 1/\prod p = 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} + \ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} - 1/\prod p$ its value and we get as a result this :

$$1= \quad 1/\prod p.\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = \sum_{n=1}^{\infty}\overline{(\prod p)}^{n} - 1/\prod p$$

$$1 \Longleftrightarrow 1/\prod p.\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} - \sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = -1/\prod p$$

$$1 \Longleftrightarrow (1/\prod p - 1).\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = -1/\prod p$$

$$1 \Longleftrightarrow ((1-\prod p)/\prod p).\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = -1/\prod p$$

$$1 \Longleftrightarrow ((\prod p - 1)/\prod p).\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1/\prod p$$

$$1 \Longleftrightarrow (\prod p - 1).\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1$$

$1 \Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1/(\prod p - 1)}$ and this formula is **Formula 44**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n}$ by 1/∏p until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1/\prod p^{1} + 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} + \ldots$

we multiply **1/∏p** by $\sum_{n=1}^{\infty}\overline{(\prod p)}^{n}$ and we get as a result this :

$$1/\prod p.\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} + \ldots$$

Then $1/\prod p.\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = \sum_{n=1}^{\infty}\overline{(\prod p)}^{n} - 1/15^{1}$

We are going to multiply again the result by **1/∏p** and we get this :

$\boxed{2 =}$ $1/\prod p.(1/\prod p.\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} + \ldots)$

$$2 \Longleftrightarrow 1/\Pi p * 1/\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1/\Pi p^{3} + 1/\Pi p^{4} + 1/\Pi p^{5} + 1/\Pi p^{6} + 1/\Pi p^{7} + \ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/\Pi p*1/\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = \sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - 1/\Pi p^{1} - 1/\Pi p^{2}$

We continue repeating multiplying the result by **1/∏p** and we get this :

$$2 \Leftrightarrow 1/\Pi p*(1/\Pi p*1/\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1/\Pi p^{3} + 1/\Pi p^{4} + 1/\Pi p^{5} + 1/\Pi p^{6} + 1/\Pi p^{7} + \ldots)$$

$$2 \Leftrightarrow 1/\Pi p*1/\Pi p*1/\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1/\Pi p^{4} + 1/\Pi p^{5} + 1/\Pi p^{6} + 1/\Pi p^{7} + \ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/\Pi p*1/\Pi p*1/\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = \sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - 1/\Pi p^{1} - 1/\Pi p^{2} - 1/\Pi p^{3}$

As a result $2 \Longleftrightarrow 1/\Pi p*1/\Pi p*1/\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = \sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - (1/\Pi p^{1} + 1/\Pi p^{2} + 1/\Pi p^{3})$

We continue to repeat multiplying the result by **1/∏p** until the infinity and we get

$$\boldsymbol{*1/\prod p*1/\prod p*1/\prod p*\ldots\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} = \sum_{n=1}^{\infty}\overline{(\prod p)}^{n} - (1/\prod p^{1} + 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + \ldots)}$$

we have $\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1/\Pi p^{1} + 1/\Pi p^{2} + 1/\Pi p^{3} + 1/\Pi p^{4} + 1/\Pi p^{5} + 1/\Pi p^{6} + 1/\Pi p^{7} + \ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/\Pi p*1/\Pi p*1/\Pi p*\ldots\ldots\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = \sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - \sum_{n=1}^{\infty}\overline{(\Pi p)}^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/\Pi p * 1/\Pi p * 1/\Pi p * \ldots\ldots\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1/(\Pi p - 1) \neq 0$

Therefore: $\mathbf{1/\prod p * 1/\prod p * 1/\prod p * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number $1/\prod p$ by itself until the infinity, we get 0 zero as a result.

** Formula 45:

We have: $\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1/\Pi p^{1} + 1/\Pi p^{2} + 1/\Pi p^{3} + 1/\Pi p^{4} + 1/\Pi p^{5} + 1/\Pi p^{6} + 1/\Pi p^{7} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(15)}^{n}$ by 15 until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1/\Pi p^{1} + 1/\Pi p^{2} + 1/\Pi p^{3} + 1/\Pi p^{4} + 1/\Pi p^{5} + 1/\Pi p^{6} + 1/\Pi p^{7} + \ldots$

*15 we are going to multiply by Πp $\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n}$ and we get as a result this :

$$3 = \Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 1 + (1/\Pi p^{1} + 1/\Pi p^{2} + 1/\Pi p^{3} + 1/\Pi p^{4} + 1/\Pi p^{5} + 1/\Pi p^{6} + 1/\Pi p^{7} + \ldots)$$

$3 \Longleftrightarrow \Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - 1 = 1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4}+1/\Pi p^{5}+1/\Pi p^{6}+1/\Pi p^{7} + \ldots$

We continue repeating multiplying the result by $\prod p$ and we get this :

$3 \Leftrightarrow \Pi p*(\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - 1 = 1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4}+1/\Pi p^{5}+1/\Pi p^{6}+1/\Pi p^{7} + \ldots)$

$3 \Leftrightarrow \Pi p*\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - \Pi p^{1} = 1+(1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4}+1/\Pi p^{5} +\ldots\ldots)$

$3 \Leftrightarrow \Pi p*\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - \Pi p^{1} - 1 = 1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4}+1/\Pi p^{5}+\ldots\ldots..$

We continue repeating multiplying the result by $\prod p$ and we get this :

$3 \Longleftrightarrow \Pi p*(\Pi p*\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - \Pi p^{1} - 1= 1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4}+1/\Pi p^{5}+ \ldots)$

$3 \Longleftrightarrow \Pi p*\Pi p*\Pi p.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} - \Pi p^{2} - \Pi p^{1} = 1+(1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4} +1/\Pi p^{5}+\ldots)$

We continue to repeat multiplying the result by $\prod p$ until the infinity and we get :

$3 \Longleftrightarrow \prod p*\prod p*\prod p*\ldots\sum_{n=1}^{\infty}\overline{(\prod p)}^{n} - (\prod p^{1}+1\prod p^{2} +\prod p^{3} +\prod p^{4} +\prod p^{5} +\ldots)=1+(1/\prod p^{1}+1/\prod p^{2}+1/\prod p^{3}+1/\prod p^{4}+1/\prod p^{5}+ \ldots)$

We have: $\Pi p *\Pi p *\Pi p *\ldots.\sum_{n=1}^{\infty}\overline{(\Pi p)}^{n} = 0$

Then the result will be:

$3 \Longleftrightarrow -(\Pi p^{1}+\Pi p^{2}+\Pi p^{3}+\Pi p^{4}+\Pi p^{5}+ \ldots) =1+ (1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4} +1/\Pi p^{5}+\ldots)$

$3 \Longleftrightarrow (1/\Pi p^{1}+1/\Pi p^{2}+1/\Pi p^{3}+1/\Pi p^{4} +1/\Pi p^{5}+\ldots)+1+(\Pi p^{1}+\Pi p^{2}+\Pi p^{3}+\Pi p^{4}+\Pi p^{5}+ \ldots) = 0$

$3 \Longleftrightarrow (\Pi p^{-1}+\Pi p^{-2}+\Pi p^{-3}+\Pi p^{-4}+\Pi p^{-5}+ \ldots) + \Pi p^{0}+ (\Pi p^{1}+\Pi p^{2}+\Pi p^{3}+\Pi p^{4}+\Pi p^{5}+\ldots)= 0$

Let $\sum_{n=1}^{+\infty} \Pi p^{n} = \Pi p^{1}+\Pi p^{2}+\Pi p^{3}+\Pi p^{4}+\Pi p^{5}+\Pi p^{6}+\Pi p^{7}+\ldots\ldots...$

And let $\sum_{n=-1}^{-\infty} \Pi p^{n} = \Pi p^{-1}+\Pi p^{-2}+\Pi p^{-3}+\Pi p^{-4}+\Pi p^{-5}+\Pi p^{-6}+\Pi p^{-7}+\ldots\ldots.$

Then the result will be:

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} \Pi p^{n} + \Pi p^{0} + \sum_{n=1}^{+\infty} \Pi p^{n} = 0$

$3 \Longleftrightarrow \sum_{n\in Z} \Pi p^{n} = 0$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 43 and Formula 45:

Since Formula 43 is equal to : $\sum_{n=-1}^{-\infty} 1/\prod p^{n} + 1/\prod p^{0} + \sum_{n=1}^{+\infty} 1/\prod p^{n} = 0$

And Formula 45 is equal to : $\sum_{n=-1}^{-\infty} \prod p^{n} + \prod p^{0} + \sum_{n=1}^{+\infty} \prod p^{n} = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/\prod p^{n} + 1/\prod p^{0} + \sum_{n=1}^{+\infty} 1/\prod p^{n} = \sum_{n=-1}^{-\infty} \prod p^{n} + \prod p^{0} + \sum_{n=1}^{+\infty} \prod p^{n} = 0$

$$\sum_{n\in Z} 1/\prod \mathbf{p}^{\mathbf{n}} = \sum_{n\in Z} \prod \mathbf{p}^{\mathbf{n}} = 0$$

** Formula 46:

6 is a product of 2 prime numbers, the number 2 and the number 3, let 6 be the base of this following infinite series:

$6^{s} + 36^{s} + 216^{s} + 1296^{s} + 7776^{s} + 46656^{s} + \ldots\ldots\ldots\ldots$

If we consider 6 as the base of this infinite series, we will get:

$6^{s} + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $6^{s} + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n}$

Then $6^{s} + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots = \sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n}$

Now , let us calculate the sum of $\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n}$

we have: $\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} = 6^{s} + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots$

$*6^{s}$ we are going to multiply 6^{s} by $\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n}$ and we get as a result this :

$$6^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} = 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots$$

We have: $\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} - 6^{s} = 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots$

Let us replace $\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} - 6^{s}$ its value and we get as a result this :

$$1= \quad 6^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} = \sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} - 6^{s}$$

$$1 \Longleftrightarrow 6^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} - \sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} = -6^{s}$$

$$1 \Longleftrightarrow (6^{s} - 1) .\sum_{\substack{n=s \\ s/s}}^{\infty} (6)^{n} = -6^{s}$$

$1 \Longleftrightarrow \sum_{n=s \atop s/s}^{\infty}(6)^n = -6^s/(6^s - 1)$ and this formula is **Formula 46**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=s \atop s/s}^{\infty}(6)^n$ by 6^s until the infinity?

we multiply $\mathbf{6^s}$ by $\sum_{n=s \atop s/s}^{\infty}(6)^n$ and we get as a result this :

$$6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$$

Then $\quad 6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = \sum_{n=s \atop s/s}^{\infty}(6)^n - 6^s$

We are going to multiply again the result by $\mathbf{6^s}$ and we get this :

$$\boxed{2 =} \quad 6^s.(6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \quad 6^s.6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$$

Then we get $\;2 \Longleftrightarrow 6^s.6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = \sum_{n=s \atop s/s}^{\infty}(6)^n - 6^s - 6^{2s}$

We continue repeating multiplying the result by $\mathbf{6^s}$ and we get this :

$$2 \Longleftrightarrow \quad 6^s.(6^s.6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \quad 6^s.6^s.6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 6^s.6^s.6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = \sum_{n=s \atop s/s}^{\infty}(6)^n - 6^s - 6^{2s} - 6^{3s}$

As a result $\;2 \Longleftrightarrow 6^s.6^s.6^s.\sum_{n=s \atop s/s}^{\infty}(6)^n = \sum_{n=s \atop s/s}^{\infty}(6)^n - (6^s + 6^{2s} + 6^{3s})$

We continue to repeat multiplying the result by $\mathbf{6^s}$ until the infinity and we get :

$$6^s*6^s*6^s*\ldots\ldots\sum_{n=s \atop s/s}^{\infty}(6)^n = \sum_{n=s \atop s/s}^{\infty}(6)^n - (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots)$$

we have $\sum_{n=s \atop s/s}^{\infty}(6)^n = 6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} \ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=s \atop s/s}^{\infty}(6)^n$ and we get this :

$$2 \Longleftrightarrow 6^s*6^s*6^s*.....\sum_{n=s}^{\infty}{}_{s/s}(6)^n = \sum_{n=s}^{\infty}{}_{s/s}(6)^n - \sum_{n=s}^{\infty}{}_{s/s}(6)^n$$

As a result we get :

$$2 \Longleftrightarrow 6^s*6^s*6^s*.....\sum_{n=s}^{\infty}{}_{s/s}(6)^n = 0$$

We have as a previous result: $\sum_{n=s}^{\infty}{}_{s/s}(6)^n = -6^s/(6^s-1) \neq 0$

Therefore: $6^s*6^s*6^s*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$

Using **theorem and notion 1 of Zero** that states if we multiply a number 6^s by itself until the infinity, we get 0 zero as a result.

** Formula 47:

We have: $\sum_{n=s}^{\infty}{}_{s/s}(6)^n = 6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=s}^{\infty}{}_{s/s}(6)^n$ by $1/6^s$ until the infinity?

we have: $\sum_{n=s}^{\infty}{}_{s/s}(6)^n = 6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$

$*1/6^s$ we are going to multiply $1/6^s$ by $\sum_{n=s}^{\infty}{}_{s/s}(6)^n$ and we get as a result this :

$$3 = 1/6^s.\sum_{n=s}^{\infty}{}_{s/s}(6)^n = 1 + (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/6^s.\sum_{n=s}^{\infty}{}_{s/s}(6)^n - 1 = 6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$$

We continue repeating multiplying the result by $1/6^s$ and we get this :

$$3 \Longleftrightarrow 1/6^s*(1/6^s.\sum_{n=s}^{\infty}{}_{s/s}(6)^n - 1 = 6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/6^s*1/6^s.\sum_{n=s}^{\infty}{}_{s/s}(6)^n - 1/6^s = 1 + (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots)$$

$$3 \Longleftrightarrow 1/6^s*1/6^s.\sum_{n=s}^{\infty}{}_{s/s}(6)^n - 1/6^s - 1 = 6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots\ldots$$

We continue repeating multiplying the result by $1/6^s$ and we get this :

$$3 \Longleftrightarrow 1/6^s*(1/6^s*1/6^s.\sum_{n=s}^{\infty}{}_{s/s}(6)^n - 1/6^s - 1 = 6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots)$$

$3 \Longleftrightarrow 1/6^s * 1/6^s * 1/6^s . \sum_{n=s}^{\infty} \overline{(6)}^n_{s/s} - 1/6^{2s} - 1/6^s = 1 + (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots)$

We continue to repeat multiplying the result by **$1/6^s$** until the infinity and we get :

$3 \Longleftrightarrow 1/6^s * 1/6^s * 1/6^s * \ldots . \sum_{n=s}^{\infty} \overline{(6)}^n_{s/s} - (1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots) = 1 + (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + \ldots)$

We have: $1/6^s * 1/6^s * 1/6^s * \ldots . \sum_{n=s}^{\infty} \overline{(6)}^n_{s/s} = 0$

We are going to prove this result later on

Then the result will be:

$3 \Longleftrightarrow -(1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots) = 1 + (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + \ldots)$

$3 \Longleftrightarrow (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + \ldots) + 1 + (1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots) = 0$

$3 \Longleftrightarrow (1/6^{-s} + 1/6^{-2s} + 1/6^{-3s} + 1/6^{-4s} + 1/6^{-5s} + \ldots) + 1/6^{0s} + (1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots) = 0$

Let $\sum_{n=1}^{+\infty} 1/6^{ns} = 1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots$

And let $\sum_{n=-1}^{-\infty} 1/6^{ns} = 1/6^{-s} + 1/6^{-2s} + 1/6^{-3s} + 1/6^{-4s} + 1/6^{-5s} + 1/6^{-6s} + 1/6^{-7s} + \ldots\ldots\ldots$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/6^{ns} + 1/6^{0s} + \sum_{n=1}^{+\infty} 1/6^{ns} = 0$$

$$3 \Longleftrightarrow \quad \sum_{n \in Z} 1/6^{ns} = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 48:

6 is a product of 2 prime numbers , the number 2 and the number 3 , let 6 be the base of this following infinite series:

$1/6^s + 1/36^s + 1/216^s + 1/1296^s + 1/7776^s + 1/46656^s + \ldots\ldots\ldots\ldots\ldots$

If we consider 6 as the base of this infinite series, we will get:

$1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots$ by $\sum_{n=s}^{\infty} \overline{(6)}^n_{s/s}$

Then $1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots = \sum_{n=s}^{\infty} \overline{(6)}^n_{s/s}$

Now , let us calculate the sum of $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s}$

we have: $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = 1/6^{s} + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots$

$*1/6^{s}$ we are going to multiply $1/6^{s}$ by $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s}$ and we get as a result this :

$$1/6^{s}.\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots\ldots$$

We have: $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} - 1/6^{s} = 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} - 1/6^{s}$ its value and we get as a result this :

$$1= \quad 1/6^{s}.\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = \sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} - 1/6^{s}$$

$$1 \Longleftrightarrow 1/6^{s}.\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} - \sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = -1/6^{s}$$

$$1 \Longleftrightarrow (1/6^{s} - 1).\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = -1/6^{s}$$

$$1 \Longleftrightarrow ((1-6^{s})/6^{s}).\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = -1/6^{s}$$

$$1 \Longleftrightarrow ((6^{s}-1)/6^{s}).\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = 1/6^{s}$$

$$1 \Longleftrightarrow (6^{s} - 1).\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = 1$$

$1 \Longleftrightarrow \boldsymbol{\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = 1/(6^{s} - 1)}$ and this formula is **Formula 48**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s}$ by $1/6^{s}$ until the infinity?

we have: $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = 1/6^{s} + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots$

we multiply **$1/6^{s}$** by $\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s}$ and we get as a result this :

$$1/6^{s}.\sum_{n=s}^{\infty}\overline{(6)}^{n}_{s/s} = 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then $\quad 1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} - 1/6^{s}$

We are going to multiply again the result by **$1/6^{s}$** and we get this :

$$\boxed{2 =} \quad 1/6^{s}.(1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots)$$

$$2 \Longleftrightarrow 1/6^{s}*1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots$$

Then we get $\quad 2 \Longleftrightarrow 1/6^{s}*1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} - 1/6^{s} - 1/6^{2s}$

We continue repeating multiplying the result by **$1/6^{s}$** and we get this :

$$2 \Longleftrightarrow 1/6^{s}*(1/6^{s}*1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/6^{s}*1/6^{s}*1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/6^{s}*1/6^{s}*1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} - 1/6^{s} - 1/6^{2s} - 1/6^{3s}$

As a result $\quad 2 \Longleftrightarrow 1/6^{s}*1/6^{s}*1/6^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} - (1/6^{s} + 1/6^{2s} + 1/6^{3s})$

We continue to repeat multiplying the result by **$1/6^{s}$** until the infinity and we get

$$*1/6^{s}*1/6^{s}*1/6^{s}*\ldots\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} - (1/6^{s}+1/6^{2s}+1/6^{3s}+1/6^{4s}+1/6^{5s}+\ldots)$$

we have $\quad \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = 1/6^{s}+1/6^{2s}+1/6^{3s}+1/6^{4s}+1/6^{5s}+1/6^{6s}+1/6^{7s}+\ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/6^{s}*1/6^{s}*1/6^{s}*\ldots\ldots\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} - \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/6^{s}*1/6^{s}*1/6^{s}*\ldots\ldots\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = 0$$

We have as a previous result: $\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(6)}^{n} = 1/(6^{s} - 1) \neq 0$

Therefore: **$1/6^{s}*1/6^{s}*1/6^{s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$**

Using **theorem and notion 1 of Zero** that states if we multiply a number $1/6^s$ by itself until the infinity, we get 0 zero as a result.

** Formula 49:

We have: $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} = 1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots..$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(6)}^{n}$ by 6^s until the infinity?</u>

we have: $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} = 1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots\ldots\ldots..$

$*6^s$ we are going to multiply 6^s by $\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}}$ and we get as a result this :

$$3 = 6^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} = 1 + (1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots.)$$

$$3 \Longleftrightarrow 6^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} - 1 = 1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots\ldots$$

We continue repeating multiplying the result by $\mathbf{6^s}$ and we get this :

$$3 \Longleftrightarrow 6^s*(6^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} - 1 = 1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots)$$

$$3 \Longleftrightarrow 6^s*6^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} - 6^s = 1+(1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots)$$

$$3 \Longleftrightarrow 6^s*6^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} - 6^s - 1 = 1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + 1/6^{6s} + 1/6^{7s} + \ldots$$

We continue repeating multiplying the result by $\mathbf{6^s}$ and we get this :

$$3 \Longleftrightarrow 6^s*(6^s*6^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} - 6^s - 1 = 1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots)$$

$$3 \Longleftrightarrow 6^s*6^s*6^s.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} - 6^{2s} - 6^s = 1+(1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots)$$

We continue to repeat multiplying the result by $\mathbf{6^s}$ until the infinity and we get :

$$3 \Longleftrightarrow 6^s*6^s*6^s*\ldots.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} - (6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + \ldots) = 1+(1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots)$$

We have: $6^s*6^s*6^s*\ldots.\underset{s/s}{\sum_{n=s}^{\infty}\overline{(6)}^{n}} = 0$

Then the result will be:

$$3 \Longleftrightarrow -(6^s + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + \ldots) = 1+(1/6^s + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots..)$$

$3 \Longleftrightarrow (1/6^{s} + 1/6^{2s} + 1/6^{3s} + 1/6^{4s} + 1/6^{5s} + \ldots) + 1 + (6^{s} + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + \ldots) = 0$

$3 \Longleftrightarrow (6^{-s} + 6^{-2s} + 6^{-3s} + 6^{-4s} + 6^{-5s} + 6^{-6s} + 6^{-7s} + \ldots) + 6^{0s} + (6^{s} + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} \ldots) = 0$

Let $\sum_{n=1}^{+\infty} 6^{ns} = 6^{s} + 6^{2s} + 6^{3s} + 6^{4s} + 6^{5s} + 6^{6s} + 6^{7s} + \ldots\ldots\ldots$

And let $\sum_{n=-1}^{-\infty} 6^{ns} = 6^{-s} + 6^{-2s} + 6^{-3s} + 6^{-4s} + 6^{-5s} + 6^{-6s} + 6^{-7s} + \ldots\ldots.$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 6^{ns} + 6^{0s} + \sum_{n=1}^{+\infty} 6^{ns} = 0$$

$$3 \Longleftrightarrow \quad \sum_{n \in Z} 6^{ns} = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 47 and Formula 49:

Since Formula 47 is equal to : $\sum_{n=-1}^{-\infty} 1/6^{ns} + 1/6^{0s} + \sum_{n=1}^{+\infty} 1/6^{ns} = 0$

And Formula 49 is equal to : $\sum_{n=-1}^{-\infty} 6^{ns} + 6^{0s} + \sum_{n=1}^{+\infty} 6^{ns} = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/6^{ns} + 1/6^{0s} + \sum_{n=1}^{+\infty} 1/6^{ns} = \sum_{n=-1}^{-\infty} 6^{ns} + 6^{0s} + \sum_{n=1}^{+\infty} 6^{ns} = 0$

$$\sum_{n \in Z} 1/6^{ns} = \sum_{n \in Z} 6^{ns} = 0$$

** Formula 50:

15 is a product of 2 prime numbers, the number 5 and the number 3, let 15 be the base of this following infinite series:

$15^{s} + 225^{s} + 3375^{s} + 50625^{s} + 759375^{s} + \ldots\ldots\ldots\ldots\ldots\ldots.$

If we consider 15 as the base of this infinite series, we will get:

$15^{s} + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $15^{s} + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} (15)^{n}$

Then $15^{s} + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots\ldots = \sum_{\substack{n=s \\ s/s}}^{\infty} (15)^{n}$

Now , let us calculate the sum of $\sum_{\substack{n=s \\ s/s}}^{\infty} (15)^{n}$

we have: $\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = 15^s + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots$

$*\mathbf{15^s}$ we are going to multiply 15^s by $\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n$ and we get as a result this :

$$15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots$$

We have: $\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n - 15^s = 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots$

Let us replace $\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n - 15^s$ its value and we get as a result this :

$$1= \quad 15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = \underset{s/s}{\sum_{n=s}^{\infty}}(15)^n - 15^s$$

$$1 \Longleftrightarrow 15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n - \underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = -15^s$$

$$1 \Longleftrightarrow (15^s - 1).\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = -15^s$$

$1 \Longleftrightarrow \underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = -15^s/(15^s - 1)$ and this formula is **Formula 50**

<u>**Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n$ by 15^s until the infinity?**</u>

we multiply $\mathbf{15^s}$ by $\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n$ and we get as a result this :

$$15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then $\quad 15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = \underset{s/s}{\sum_{n=s}^{\infty}}(15)^n - 15^s$

We are going to multiply again the result by $\mathbf{15^s}$ and we get this :

$$\boxed{2 =} \quad 15^s.(15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots)$$

$$2 \Longleftrightarrow \quad 15^s.15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots\ldots$$

Then we get $\quad 2 \Longleftrightarrow 15^s.15^s.\underset{s/s}{\sum_{n=s}^{\infty}}(15)^n = \underset{s/s}{\sum_{n=s}^{\infty}}(15)^n - 15^s - 15^{2s}$

We continue repeating multiplying the result by $\mathbf{15^s}$ and we get this :

$$2 \Longleftrightarrow 15^{s}.(15^{s}.15^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow 15^{s}.15^{s}.15^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 15^{s}.15^{s}.15^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} - 15^{s} - 15^{2s} - 15^{3s}$

As a result $2 \Longleftrightarrow 15^{s}.15^{s}.15^{s}.\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} - (15^{s} + 15^{2s} + 15^{3s})$

We continue to repeat multiplying the result by $\mathbf{15^{s}}$ until the infinity and we get :

$$15^{s}*15^{s}*15^{s}*\ldots\ldots\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} - (15^{s} + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + \ldots\ldots\ldots)$$

we have $\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = 15^{s} + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} \ldots\ldots\ldots\ldots$

we replace the right side of the result by $\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}}$ and we get this :

$$2 \Longleftrightarrow 15^{s}*15^{s}*15^{s}*\ldots\ldots\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = \underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} - \underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}}$$

As a result we get :

$$2 \Longleftrightarrow 15^{s}*15^{s}*15^{s}*\ldots\ldots\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = 0$$

We have as a previous result: $\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = -15^{s}/(15^{s} - 1) \neq 0$

Therefore: $\mathbf{15^{s}*15^{s}*15^{s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{15^{s}}$ by itself until the infinity, we get 0 zero as a result.

** Formula 51:

We have: $\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = 15^{s} + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}}$ by $1/15^{s}$ until the infinity?

we have: $\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}} = 15^{s} + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + 15^{6s} + 15^{7s} + \ldots\ldots\ldots\ldots$

$\mathbf{*1/15^{s}}$ we are going to multiply $1/15^{s}$ by $\underset{s/s}{\sum_{n=s}^{\infty}(15)^{n}}$ and we get as a result this :

$$3= \ 1/15^s.\sum_{n=s}^{\infty}{}_{s/s}(15)^n = 1+ (15^s + 15^{2s} + 15^{3s} + 15^{4s} + 15^{5s} + ...)$$

$$3\Leftrightarrow 1/15^s.\sum_{n=s}^{\infty}{}_{s/s}(15)^n - 1 = 15^s +15^{2s} +15^{3s} +15^{4s} +15^{5s} +15^{6s} +15^{7s} +..............$$

We continue repeating multiplying the result by **$1/15^s$** and we get this :

$$3\Leftrightarrow 1/15^s*(1/15^s.\sum_{n=s}^{\infty}{}_{s/s}(15)^n - 1 = 15^s +15^{2s} +15^{3s} +15^{4s} +15^{5s} +15^{6s} +15^{7s} +......)$$

$$3\Leftrightarrow 1/15^s*1/15^s.\sum_{n=s}^{\infty}{}_{s/s}(15)^n - 1/15^s = 1+(15^s +15^{2s} +15^{3s} +15^{4s} +15^{5s} +15^{6s} +15^{7s} +...)$$

$$3\Leftrightarrow 1/15^s*1/15^s.\sum_{n=s}^{\infty}{}_{s/s}(15)^n - 1/15^s - 1 = 15^s +15^{2s} +15^{3s} +15^{4s} +15^{5s} +15^{6s} +15^{7s} +...$$

We continue repeating multiplying the result by **$1/15^s$** and we get this :

$$3\Leftrightarrow 1/15^s*(1/15^s*1/15^s.\sum_{n=s}^{\infty}{}_{s/s}(15)^n - 1/15^s - 1 = 15^s +15^{2s} +15^{3s} +15^{4s} +15^{5s} +...)$$

$$3\Leftrightarrow 1/15^s*1/15^s*1/15^s.\sum_{n=s}^{\infty}{}_{s/s}(15)^n - 1/15^{2s} - 1/15^s= 1+(15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s} +...)$$

We continue to repeat multiplying the result by **$1/15^s$** until the infinity and we get :

$$3\Leftrightarrow 1/15^s*1/15^s*1/15^s*....\sum_{n=s}^{\infty}{}_{s/s}(15)^n - (1/15^s+1/15^{2s} +1/15^{3s} +1/15^{4s} +1/15^{5s} +...)= 1+(15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s}+ ...)$$

We have: $1/15^s*1/15^s*1/15^s*....\sum_{n=s}^{\infty}{}_{s/s}(15)^n = 0$

We are going to prove this result later on

Then the result will be:

$$3 \Leftrightarrow -(1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} +...)=1+(15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s}+ ...)$$

$$3 \Leftrightarrow (15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s} +...)+1+(1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} +...)= 0$$

$$3\Leftrightarrow (1/15^{-s}+1/15^{-2s}+1/15^{-3s}+1/15^{-4s}+1/15^{-5s}+ ...)+1/15^{0s}+(1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+...)= 0$$

Let $\sum_{n=1}^{+\infty} 1/15^{ns} = 1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} +1/15^{6s}+ 1/15^{7s}+...$

And let $\sum_{n=-1}^{-\infty} 1/15^{ns} = 1/15^{-s}+1/15^{-2s}+1/15^{-3s}+1/15^{-4s}+1/15^{-5s}+1/15^{-6s}+1/15^{-7s} +......$

Then the result will be:

$$3 \Leftrightarrow \ \sum_{n=-1}^{-\infty} \mathbf{1/15^{ns}} + \mathbf{1/15^{0s}} + \sum_{n=1}^{+\infty} \mathbf{1/15^{ns}} = \mathbf{0}$$

$$3\Leftrightarrow \sum_{n\in Z} \mathbf{1/15^{ns}} = \mathbf{0}$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 52:

15 is a product of 2 prime numbers , the number 5 and the number 3 , let 15 be the base of this following infinite series:

$1/15^s + 1/225^s + 1/3375^s + 1/50625^s + 1/759375^s +$…………………

If we consider 15 as the base of this infinite series, we will get:

$1/15^s + 1/15^{2s} + 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} +$ ………………………………

Let us denote this previous infinite series $1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+1/15^{6s}+1/15^{7s}+\ldots$ by $\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n}$

Then $$1/15^s + 1/15^{2s} + 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} +\ldots.. = \sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n}$$

Now , let us calculate the sum of $\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n}$

we have: $$\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} = 1/15^s +1/15^{2s} +1/15^{3s} +1/15^{4s} +1/15^{5s} +1/15^{6s} +1/15^{7s} +\ldots$$

$*1/15^s$ we are going to multiply $1/15^s$ by $\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n}$ and we get as a result this :

$$1/15^s.\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} =1/15^s +1/15^{2s} +1/15^{3s} +1/15^{4s} +1/15^{5s} +1/15^{6s} +1/15^{7s} + \ldots$$

We have: $$\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} - 1/15^s = 1/15^{2s} +1/15^{3s} +1/15^{4s} +1/15^{5s} +1/15^{6s} +1/15^{7s} + \ldots\ldots$$

Let us replace $\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} - 1/15^s$ its value and we get as a result this :

$$1= \quad 1/15^s.\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} = \sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} - 1/15^s$$

$$1 \Longleftrightarrow 1/15^s.\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} - \sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} = -1/15^s$$

$$1 \Longleftrightarrow (1/15^s - 1).\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} = -1/15^s$$

$$1 \Longleftrightarrow ((1-15^s)/15^s).\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} = -1/15^s$$

$$1 \Longleftrightarrow ((15^s-1)/15^s).\sum_{n=s}^{\infty}\underset{s/s}{\overline{(15)}}^{n} = 1/15^s$$

$1 \Longleftrightarrow (15^s - 1).\sum_{n=s}^{\infty} \overline{(15)}^n = 1$
s/s

$1 \Longleftrightarrow$ $\boldsymbol{\sum_{n=s}^{\infty} \overline{(15)}^n = 1/(15^s - 1)}$ and this formula is **Formula 52**
$\boldsymbol{s/s}$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=s}^{\infty} \overline{(15)}^n$ by $1/15^s$ until the infinity?</u>
s/s

we have: $\sum_{n=s}^{\infty} \overline{(15)}^n = 1/15^s + 1/15^{2s} + 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} + \ldots$
s/s

we multiply $\mathbf{1/15^s}$ by $\sum_{n=s}^{\infty} \overline{(15)}^n$ and we get as a result this :
s/s

$1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = 1/15^{2s} + 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} + \ldots\ldots$
s/s

Then $1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = \sum_{n=s}^{\infty} \overline{(15)}^n - 1/15^s$
s/s s/s

We are going to multiply again the result by $\mathbf{1/15^s}$ and we get this :

$\boxed{2 =}$ $1/15^s.(1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = 1/15^{2s} + 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} + \ldots)$
s/s

$2 \Longleftrightarrow 1/15^s * 1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} + \ldots\ldots$
s/s

Then we get $2 \Longleftrightarrow 1/15^s * 1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = \sum_{n=s}^{\infty} \overline{(15)}^n - 1/15^s - 1/15^{2s}$
s/s s/s

We continue repeating multiplying the result by $\mathbf{1/15^s}$ and we get this :

$2 \Leftrightarrow 1/15^s * (1/15^s * 1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} + \ldots\ldots)$
s/s

$2 \Longleftrightarrow 1/15^s * 1/15^s * 1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = 1/15^{4s} + 1/15^{5s} + 1/15^{6s} + 1/15^{7s} + \ldots\ldots$
s/s

Then we get $2 \Leftrightarrow 1/15^s * 1/15^s * 1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = \sum_{n=s}^{\infty} \overline{(15)}^n - 1/15^s - 1/15^{2s} - 1/15^{3s}$
s/s s/s

As a result $2 \Leftrightarrow 1/15^s * 1/15^s * 1/15^s.\sum_{n=s}^{\infty} \overline{(15)}^n = \sum_{n=s}^{\infty} \overline{(15)}^n - (1/15^s + 1/15^{2s} + 1/15^{3s})$
s/s s/s

We continue to repeat multiplying the result by $\mathbf{1/15^s}$ until the infinity and we get

$*1/15^s * 1/15^s * 1/15^s \ldots \sum_{n=s}^{\infty} \overline{(15)}^n = \sum_{n=s}^{\infty} \overline{(15)}^n - (1/15^s + 1/15^{2s} + 1/15^{3s} + 1/15^{4s} + 1/15^{5s} + \ldots..)$
s/s s/s

we have $\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} = 1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+1/15^{6s}+1/15^{7s}+ \ldots\ldots$

we replace the right side of the result by $\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n}$ and we get this :

$$2 \Longleftrightarrow 1/15^{s}*1/15^{s}*1/15^{s}*\ldots\ldots\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} = \sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} - \sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/15^{s}*1/15^{s}*1/15^{s}*\ldots\ldots\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} = 0$$

We have as a previous result: $\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} = 1/(15^{s}-1) \neq 0$

Therefore: $\mathbf{1/15^{s}*1/15^{s}*1/15^{s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{1/15^{s}}$ by itself until the infinity, we get 0 zero as a result.

** Formula 53:

We have: $\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} = 1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+1/15^{6s}+1/15^{7s}+ \ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(15)}^{n}$ by 15^{s} until the infinity?

we have: $\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} = 1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+1/15^{6s}+1/15^{7s}+ \ldots\ldots$

$\mathbf{*15^{s}}$ we are going to multiply 15^{s} by $\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n}$ and we get as a result this :

$$3= 15^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} = 1+ (1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+1/15^{6s}+1/15^{7s}+\ldots.)$$

$$3\Leftrightarrow 15^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} - 1 = 1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+1/15^{6s}+1/15^{7s}+\ldots$$

We continue repeating multiplying the result by $\mathbf{15^{s}}$ and we get this :

$$3\Leftrightarrow 15^{s}*(15^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} - 1= 1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+1/15^{6s}+1/15^{7s}+ \ldots)$$

$$3\Leftrightarrow 15^{s}*15^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} - 15^{s} = 1+ (1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+\ldots..)$$

$$3\Leftrightarrow 15^{s}*15^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty}\overline{(15)}^{n} - 15^{s} - 1 = 1/15^{s}+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} + \ldots$$

We continue repeating multiplying the result by 15^s and we get this :

$$3 \Leftrightarrow 15^s*(15^s*15^s.\sum_{n=s/s}^{\infty}\overline{(15)}^n - 15^s - 1 = 1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} + ...)$$

$$3 \Leftrightarrow 15^s*15^s*15^s.\sum_{n=s/s}^{\infty}\overline{(15)}^n - 15^{2s} - 15^s = 1+(1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} + ...)$$

We continue to repeat multiplying the result by 15^s until the infinity and we get :

$$3 \Leftrightarrow 15^s*15^s*15^s*....\sum_{n=s/s}^{\infty}\overline{(15)}^n - (15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s}+...) = 1+(1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s}+ ...)$$

We have: $15^s*15^s*15^s*....\sum_{n=s/s}^{\infty}\overline{(15)}^n = 0$

Then the result will be:

$$3 \Leftrightarrow -(15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s}+ ...) = 1+ (1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} +.....)$$

$$3 \Longleftrightarrow (1/15^s+1/15^{2s}+1/15^{3s}+1/15^{4s}+1/15^{5s} +...)+1+(15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s} + ...) = 0$$

$$3 \Longleftrightarrow (15^{-s}+15^{-2s}+15^{-3s}+15^{-4s}+15^{-5s}+ ...) + 15^{0s}+ (15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s}+...) = 0$$

Let $\sum_{n=1}^{+\infty} 15^{ns} = 15^s+15^{2s}+15^{3s}+15^{4s}+15^{5s}+15^{6s}+15^{7s}+.........$

And let $\sum_{n=-1}^{-\infty} 15^{ns} = 15^{-s}+15^{-2s}+15^{-3s}+15^{-4s}+15^{-5s}+15^{-6s}+15^{-7s}+.......$

Then the result will be:

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} \mathbf{15^{ns}} + \mathbf{15^{0s}} + \sum_{n=1}^{+\infty} \mathbf{15^{ns}} = \mathbf{0}$$

$$3 \Longleftrightarrow \sum_{n \in Z} \mathbf{15^{ns}} = \mathbf{0}$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 51 and Formula 53:

Since Formula 51 is equal to : $\sum_{n=-1}^{-\infty} 1/15^{ns} + 1/15^{0s} + \sum_{n=1}^{+\infty} 1/15^{ns} = 0$

And Formula 53 is equal to : $\sum_{n=-1}^{-\infty} 15^{ns} + 15^{0s} + \sum_{n=1}^{+\infty} 15^{ns} = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/15^{ns} + 1/15^{0s} + \sum_{n=1}^{+\infty} 1/15^{ns} = \sum_{n=-1}^{-\infty} 15^{ns} + 15^{0s} + \sum_{n=1}^{+\infty} 15^{ns} = 0$

$$\sum_{n \in Z} \mathbf{1/15^{ns}} = \sum_{n \in Z} \mathbf{15^{ns}} = \mathbf{0}$$

** Formula 54:

$\prod p$ is a product of prime numbers, these prime numbers may contain the prime number 2, let $\prod p$ be the base of this following infinite series:

$\prod p^{s} + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $\prod p^{s} + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n}$

Then $\prod p^{s} + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n}$

Now , let us calculate the sum of $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n}$

we have: $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} = \prod p^{s} + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots$

$*\boldsymbol{\prod p^{s}}$ we are going to multiply $\prod p^{s}$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n}$ and we get as a result this :

$$\prod p^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} = \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots$$

We have: $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} - \prod p^{s} = \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots$

Let us replace $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} - \prod p^{s}$ its value and we get as a result this :

$$1 = \quad \prod p^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} - \prod p^{s}$$

$$1 \Longleftrightarrow \prod p^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} - \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} = - \prod p^{s}$$

$$1 \Longleftrightarrow (\prod p^{s} - 1) .\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} = - \prod p^{s}$$

$1 \Longleftrightarrow \boldsymbol{\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} = - \prod p^{s}/(\prod p^{s} - 1)}$ and this formula is **Formula 54**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n}$ by $\prod p^{s}$ until the infinity?</u>

we multiply $\boldsymbol{\prod p^{s}}$ by $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n}$ and we get as a result this :

$$\prod p^{s}.\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^{n} = \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots$$

Then $$\prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n - \prod p^s$$

We are going to multiply again the result by $\prod \mathbf{p}^s$ and we get this :

$$\boxed{2 =} \quad \prod p^s.(\prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots)$$

$$2 \Longleftrightarrow \quad \prod p^s . \prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots$$

Then we get $$2 \Longleftrightarrow \prod p^s . \prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n - \prod p^s - \prod p^{2s}$$

We continue repeating multiplying the result by $\prod \mathbf{p}^s$ and we get this :

$$2 \Longleftrightarrow \prod p^s.(\prod p^s . \prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \quad \prod p^s . \prod p^s . \prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots$$

Then we get $$2 \Longleftrightarrow \prod p^s . \prod p^s . \prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n - \prod p^s - \prod p^{2s} - \prod p^{3s}$$

As a result $$2 \Longleftrightarrow \prod p^s . \prod p^s . \prod p^s . \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n - (\prod p^s + \prod p^{2s} + \prod p^{3s})$$

We continue to repeat multiplying the result by $\prod \mathbf{p}^s$ until the infinity and we get :

$$\prod p^s * \prod p^s * \prod p^s * \ldots\ldots \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n - (\prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \ldots)$$

we have $$\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} \ldots\ldots\ldots\ldots$$

we replace the right side of the result by $\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n$ and we get this :

$$2 \Longleftrightarrow \prod p^s * \prod p^s * \prod p^s * \ldots\ldots \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n - \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n$$

As a result we get :

$$2 \Longleftrightarrow \prod p^s * \prod p^s * \prod p^s * \ldots\ldots \sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = 0$$

We have as a previous result: $$\sum_{\substack{n=s \\ s/s}}^{\infty} (\prod p)^n = -\prod p^s / (\prod p^s - 1) \neq 0$$

Therefore: $$\boldsymbol{\prod p^{s*} \prod p^{s*} \prod p^{s*} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\prod p^s$ by itself until the infinity, we get 0 zero as a result.

** Formula 55:

We have: $\sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n = \prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n$ by $1/\prod p^s$ until the infinity?

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n = \prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots$

$*\mathbf{1/\prod p^s}$ we are going to multiply $1/\prod p^s$ by $\sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n$ and we get as a result this :

$$3= \quad 1/\prod p^s . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n = 1 + (\prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \ldots\ldots\ldots\ldots)$$

$$3 \Longleftrightarrow 1/\prod p^s . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n - 1 = \prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots\ldots\ldots$$

We continue repeating multiplying the result by $\mathbf{1/\prod p^s}$ and we get this :

$$3 \Longleftrightarrow 1/\prod p^s * (1/\prod p^s . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n - 1 = \prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots\ldots)$$

$$3 \Longleftrightarrow 1/\prod p^s * 1/\prod p^s . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n - 1/\prod p^s = 1 + (\prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots)$$

$$3 \Longleftrightarrow 1/\prod p^s * 1/\prod p^s . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n - 1/\prod p^s - 1 = \prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \ldots$$

We continue repeating multiplying the result by $\mathbf{1/\prod p^s}$ and we get this :

$$3 \Longleftrightarrow 1/\prod p^s * (1/\prod p^s * 1/\prod p^s . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n - 1/\prod p^s - 1 = \prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \ldots)$$

$$3 \Leftrightarrow 1/\prod p^s * 1/\prod p^s * 1/\prod p^s . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n - 1/\prod p^{2s} - 1/\prod p^s = 1 + (\prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \ldots)$$

We continue to repeat multiplying the result by $\mathbf{1/\prod p^s}$ until the infinity and we get :

$$3 \Longleftrightarrow 1/\prod p^s * 1/\prod p^s * 1/\prod p^s * \ldots . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n - (1/\prod p^s + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + \ldots) = 1 + (\prod p^s + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \ldots)$$

We have: $1/\prod p^s * 1/\prod p^s * 1/\prod p^s * \ldots . \sum_{\substack{n=s\\ s/s}}^{\infty}(\prod p)^n = 0$

We are going to prove this result later on

Then the result will be:

$3 \Leftrightarrow -(1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots)=1+(\prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+\ldots)$

$3 \Leftrightarrow (\prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+\ldots)+1+(1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots)=0$

Let $\sum_{n=1}^{+\infty} 1/\prod p^{ns} = 1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+1/\prod p^{6s}+1/\prod p^{7s}+\ldots$

And let $\sum_{n=-1}^{-\infty} 1/\prod p^{ns} = 1/\prod p^{-s}+1/\prod p^{-2s}+1/\prod p^{-3s}+1/\prod p^{-4s}+1/\prod p^{-5s}+1/\prod p^{-6s}+1/\prod p^{-7s}+\ldots.$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/\prod p^{ns} + 1/\prod p^{0s} + \sum_{n=1}^{+\infty} 1/\prod p^{ns} = 0$$

$$3 \Longleftrightarrow \sum_{n\in Z} 1/\prod p^{ns} = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 56:

$\prod p$ is a product of prime numbers, these prime numbers may contain the prime number 2, let $\prod p$ be the base of this following infinite series:

$1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + \ldots\ldots$ by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n}$

Then $1/\prod p^{s} +1/\prod p^{2s} +1/\prod p^{3s} +1/\prod p^{4s} +1/\prod p^{5s} +1/\prod p^{6s} +1/\prod p^{7s} +\ldots. = \sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n}$

Now , let us calculate the sum of $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n}$

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} = 1/\prod p^{s} +1/\prod p^{2s} +1/\prod p^{3s} +1/\prod p^{4s} +1/\prod p^{5s} +1/\prod p^{6s} +1/\prod p^{7s} +\ldots$

$*1/\prod p^{s}$ we are going to multiply $1/\prod p^{s}$ by $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n}$ and we get as a result this :

$$1/\prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} =1/\prod p^{s} +1/\prod p^{2s} +1/\prod p^{3s} +1/\prod p^{4s} +1/\prod p^{5s} +1/\prod p^{6s} +1/\prod p^{7s}+\ldots$$

We have: $\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - 1/\prod p^{s} = 1/\prod p^{2s} +1/\prod p^{3s} +1/\prod p^{4s} +1/\prod p^{5s} +1/\prod p^{6s} +1/\prod p^{7s} + \ldots$

Let us replace $\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} - 1/\prod p^{s}$ its value and we get as a result this :

$$1 = \quad 1/\prod p^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} - 1/\prod p^{s}$$

$$1 \Longleftrightarrow 1/\prod p^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} - \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = -1/\prod p^{s}$$

$$1 \Longleftrightarrow (1/\prod p^{s} - 1).\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = -1/\prod p^{s}$$

$$1 \Longleftrightarrow ((1-\prod p^{s})/\prod p^{s}).\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = -1/\prod p^{s}$$

$$1 \Longleftrightarrow ((\prod p^{s}-1)/\prod p^{s}).\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = 1/\prod p^{s}$$

$$1 \Longleftrightarrow (\prod p^{s} - 1).\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = 1$$

$$1 \Longleftrightarrow \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = 1/(\prod p^{s} - 1)$$ and this formula is **Formula 56**

Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n}$ by $1/\prod p^{s}$ until the infinity?

we have: $$\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = 1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots$$

we multiply $\mathbf{1/\prod p^{s}}$ by $\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n}$ and we get as a result this :

$$1/\prod p^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots\ldots$$

Then $$1/\prod p^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} - 1/\prod p^{s}$$

We are going to multiply again the result by $\mathbf{1/\prod p^{s}}$ and we get this :

$$\boxed{2 =}\ 1/\prod p^{s}.(1/\prod p^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots)$$

$$2 \Longleftrightarrow 1/\prod p^{s}*1/\prod p^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots\ldots$$

Then we get $$2 \Longleftrightarrow 1/\prod p^{s}*1/\prod p^{s}.\underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} = \underset{s/s}{\sum_{n=s}^{\infty}}\overline{(\prod p)}^{n} - 1/\prod p^{s} - 1/\prod p^{2s}$$

We continue repeating multiplying the result by $\mathbf{1/\prod p^{s}}$ and we get this :

$$2 \Longleftrightarrow 1/\prod p^{s} * (1/\prod p^{s} * 1/\prod p^{s} . \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots)$$

$$2 \Longleftrightarrow 1/\prod p^{s} * 1/\prod p^{s} * 1/\prod p^{s} . \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/\prod p^{s} * 1/\prod p^{s} * 1/\prod p^{s} . \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} - 1/\prod p^{s} - 1/\prod p^{2s} - 1/\prod p^{3s}$

As a result $2 \Longleftrightarrow 1/\prod p^{s} * 1/\prod p^{s} * 1/\prod p^{s} . \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} - (1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s})$

We continue to repeat multiplying the result by $\mathbf{1/\prod p^{s}}$ until the infinity and we get

$$*1/\prod p^{s} * 1/\prod p^{s} * 1/\prod p^{s} \ldots \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} - (1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + \ldots)$$

we have $\sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = 1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots\ldots$

we replace the right side of the result by $\sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n}$ and we get this :

$$2 \Longleftrightarrow 1/\prod p^{s} * 1/\prod p^{s} * 1/\prod p^{s} * \ldots\ldots \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} - \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n}$$

As a result we get :

$$2 \Longleftrightarrow 1/\prod p^{s} * 1/\prod p^{s} * 1/\prod p^{s} * \ldots\ldots \sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = 0$$

We have as a previous result: $\sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = 1/(\prod p^{s} - 1) \neq 0$

Therefore: $\mathbf{1/\prod p^{s} * 1/\prod p^{s} * 1/\prod p^{s} * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{1/\prod p^{s}}$ by itself until the infinity, we get 0 zero as a result.

** Formula 57:

We have: $\sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = 1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty} \left(\overline{\prod p}\right)^{n}$ by $\prod p^{s}$ until the infinity?

we have: $\sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n} = 1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots\ldots$

$\mathbf{*\prod p^{s}}$ we are going to multiply $\prod p^{s}$ by $\sum_{\substack{n=s\\ s/s}}^{\infty} \left(\overline{\prod p}\right)^{n}$ and we get as a result this :

$$3= \prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} = 1+ (1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+1/\prod p^{6s}+1/\prod p^{7s}+\ldots)$$

$$3\Leftrightarrow \prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - 1=1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+1/\prod p^{6s}+1/\prod p^{7s}+\ldots$$

We continue repeating multiplying the result by $\prod p^{s}$ and we get this :

$$3\Leftrightarrow \prod p^{s}*(\prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - 1=1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+1/\prod p^{6s}+1/\prod p^{7s}+\ldots)$$

$$3\Leftrightarrow \prod p^{s}*\prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - \prod p^{s} = 1+ (1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots..)$$

$$3\Leftrightarrow \prod p^{s}*\prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - \prod p^{s} - 1 = 1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots$$

We continue repeating multiplying the result by $\prod p^{s}$ and we get this :

$$3\Leftrightarrow \prod p^{s}*(\prod p^{s}*\prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - \prod p^{s} - 1= 1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots)$$

$$3\Leftrightarrow \prod p^{s}*\prod p^{s}*\prod p^{s}.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - \prod p^{2s} - \prod p^{s}=1+(1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots)$$

We continue to repeat multiplying the result by $\prod p^{s}$ until the infinity and we get :

$$3\Leftrightarrow \prod p^{s}*\prod p^{s}*\prod p^{s}*\ldots.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} - (\prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+\ldots)= 1+(1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots)$$

We have: $\prod p^{s}*\prod p^{s}*\prod p^{s}*\ldots.\sum_{\substack{n=s\\ s/s}}^{\infty}\overline{(\prod p)}^{n} = 0$

Then the result will be:

$$3\Leftrightarrow -(\prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+\ldots) =1+ (1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots..)$$

$$3\Leftrightarrow (1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+\ldots)+1+(\prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+\ldots) = 0$$

$$3 \Longleftrightarrow (\prod p^{-s}+\prod p^{-2s}+\prod p^{-3s}+\prod p^{-4s}+\prod p^{-5s}+\ldots) + \prod p^{0s}+ (\prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+\ldots)= 0$$

Let $\sum_{n=1}^{+\infty}\prod p^{ns} = \prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+\prod p^{6s}+\prod p^{7s}+\ldots\ldots..$

And let $\sum_{n=-1}^{-\infty}\prod p^{ns} = \prod p^{-s}+\prod p^{-2s}+\prod p^{-3s}+\prod p^{-4s}+\prod p^{-5s}+\prod p^{-6s}+\prod p^{-7s}+\ldots\ldots.$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty}\prod \mathbf{p}^{\mathbf{ns}} + \prod \mathbf{p}^{\mathbf{0s}} + \sum_{n=1}^{+\infty}\prod \mathbf{p}^{\mathbf{ns}} = \mathbf{0}$$

$$3 \Longleftrightarrow \quad \sum_{n\in Z}\prod \mathbf{p}^{\mathbf{ns}} = \mathbf{0}$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 55 and Formula 57:

Since Formula 55 is equal to : $\sum_{n=-1}^{-\infty} 1/\prod p^{ns} + 1/\prod p^{0s} + \sum_{n=1}^{+\infty} 1/\prod p^{ns} = 0$

And Formula 57 is equal to : $\sum_{n=-1}^{-\infty} \prod p^{ns} + \prod p^{0s} + \sum_{n=1}^{+\infty} \prod p^{ns} = 0$

Therefore $\prod p^{ns} + 1/\prod p^{0s} + \sum_{n=1}^{+\infty} 1/\prod p^{ns} = \sum_{n=-1}^{-\infty} \prod p^{ns} + \prod p^{0s} + \sum_{n=1}^{+\infty} \prod p^{ns} = 0$

$$\sum_{n \in Z} 1/\prod \mathbf{p}^{\mathbf{ns}} = \sum_{n \in Z} \prod \mathbf{p}^{\mathbf{ns}} = 0$$

** Formula 58:

i is an imaginary number, let i be the base of this following infinite series:

$i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots$ by $\sum_{n=1}^{\infty}(i)^n$

Then $i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots\ldots = \sum_{n=1}^{\infty}(i)^n$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(i)^n$

we have: $\sum_{n=1}^{\infty}(i)^n = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots$

*i we are going to multiply i by $\sum_{n=1}^{\infty}(i)^n$ and we get as a result this :

$i.\sum_{n=1}^{\infty}(i)^n = i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots$

We have: $\sum_{n=1}^{\infty}(i)^n - i = i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty}(i)^n - i$ its value and we get as a result this :

$$1 = \quad i.\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n - i$$

$$1 \Longleftrightarrow i.\sum_{n=1}^{\infty}(i)^n - \sum_{n=1}^{\infty}(i)^n = -i$$

$$1 \Longleftrightarrow (i-1).\sum_{n=1}^{\infty}(i)^n = -i$$

$$1 \Longleftrightarrow \sum_{n=1}^{\infty}(\mathbf{i})^{\mathbf{n}} = -\mathbf{i}/(\mathbf{i}-1) = \mathbf{i}/(1-\mathbf{i}) = -1/(\mathbf{i}+1) = -1 + 1/(1-\mathbf{i})$$

and this formula is **Formula 58**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(i)^n$ by i until the infinity?

we multiply i by $\sum_{n=1}^{\infty}(i)^n$ and we get as a result this :

$$i.\sum_{n=1}^{\infty}(i)^n = i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots$$

Then $$i.\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n - i^1$$

We are going to multiply again the result by i and we get this :

$$\boxed{2 =} \quad i.(i.\sum_{n=1}^{\infty}(i)^n = i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \quad i.i.\sum_{n=1}^{\infty}(i)^n = i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow i.i.\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n - i^1 - i^2$

We continue repeating multiplying the result by i and we get this :

$$2 \Longleftrightarrow \quad i.(i.i.\sum_{n=1}^{\infty}(i)^n = i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots)$$

$$2 \Longleftrightarrow \quad i.i.i.\sum_{n=1}^{\infty}(i)^n = i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow i.i.i.\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n - i^1 - i^2 - i^3$

As a result $2 \Longleftrightarrow i.i.i.\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n - (i^1 + i^2 + i^3)$

We continue to repeat multiplying the result by i until the infinity and we get :

$$i*i*i*\ldots..\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n - (i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots)$$

we have $\sum_{n=1}^{\infty}(i)^n = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 \ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}(i)^n$ and we get this :

$$2 \Longleftrightarrow \quad i*i*i*\ldots..\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n - \sum_{n=1}^{\infty}(i)^n$$

As a result we get :

$$2 \Longleftrightarrow i*i*i*\ldots..\sum_{n=1}^{\infty}(i)^n = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}(i)^n = -i/(i-1) \neq 0$

Therefore: **$i*i*i*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$**

Using **theorem and notion 1 of Zero** that states if we multiply a number i by itself until the infinity, we get 0 zero as a result.

** Formula 59:

We have: $\sum_{n=1}^{\infty}(i)^n = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(i)^n$ by 1/i until the infinity?

we have: $\sum_{n=1}^{\infty}(i)^n = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots$

*1/i we are going to multiply 1/i by $\sum_{n=1}^{\infty}(i)^n$ and we get as a result this :

$3 = 1/i.\sum_{n=1}^{\infty}(i)^n = 1 + (i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots)$

$3 \Longleftrightarrow 1/i.\sum_{n=1}^{\infty}(i)^n - 1 = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/i and we get this :

$3 \Longleftrightarrow 1/i*(1/i.\sum_{n=1}^{\infty}(i)^n - 1 = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots)$

$3 \Longleftrightarrow 1/i*1/i.\sum_{n=1}^{\infty}(i)^n - 1/i^1 = 1 + (i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots)$

$3 \Longleftrightarrow 1/i*1/i.\sum_{n=1}^{\infty}(i)^n - 1/i^1 - 1 = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots\ldots\ldots$

We continue repeating multiplying the result by 1/i and we get this :

$3 \Longleftrightarrow 1/i*(1/i*1/i.\sum_{n=1}^{\infty}(i)^n - 1/i^1 - 1 = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots\ldots)$

$3 \Longleftrightarrow 1/i*1/i*1/i.\sum_{n=1}^{\infty}(i)^n - 1/i^2 - 1/i^1 = 1 + (i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots)$

We continue to repeat multiplying the result by 1/i until the infinity and we get

$3 \Longleftrightarrow 1/i*1/i*1/i*\ldots.\sum_{n=1}^{\infty}(i)^n - (1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + \ldots) = 1 + (i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots)$

We have: $1/i*1/i*1/i*\ldots.\sum_{n=1}^{\infty}(i)^n = 0$

We are going to prove this result later on

Then the result will be:

$3 \Leftrightarrow -(1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots) = 1 + (i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots)$

$3 \Leftrightarrow (i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + \ldots) + 1 + (1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots) = 0$

$3 \Longleftrightarrow (1/i^{-1} + 1/i^{-2} + 1/i^{-3} + 1/i^{-4} + 1/i^{-5} + 1/i^{-6} + 1/i^{-7} + \ldots) + 1/i^0 + (1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 \ldots) = 0$

Let $\sum_{n=1}^{+\infty} 1/i^n = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots$

And let $\sum_{n=-1}^{-\infty} 1/i^n = 1/i^{-1} + 1/i^{-2} + 1/i^{-3} + 1/i^{-4} + 1/i^{-5} + 1/i^{-6} + 1/i^{-7} + \ldots\ldots\ldots\ldots$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/i^{n} + 1/i^{0} + \sum_{n=1}^{+\infty} 1/i^{n} = 0$$

$$3 \Longleftrightarrow \quad \sum_{n \in Z} 1/i^{n} = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** Formula 60:

i is an imaginary number, let i be the base of this following infinite series:

$1/i + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

Let us denote this previous infinite series $1/i + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots$ by $\sum_{n=1}^{\infty} \overline{(i)}^{n}$

Then $1/i + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots\ldots\ldots = \sum_{n=1}^{\infty} \overline{(i)}^{n}$

Now , let us calculate the sum of $\sum_{n=1}^{\infty} \overline{(i)}^{n}$

we have: $\sum_{n=1}^{\infty} \overline{(i)}^{n} = 1/i + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots$

*1/i we are going to multiply $1/i$ by $\sum_{n=1}^{\infty} \overline{(i)}^{n}$ and we get as a result this :

$1/i.\sum_{n=1}^{\infty} \overline{(i)}^{n} = 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots$

We have: $\sum_{n=1}^{\infty} \overline{(i)}^{n} - 1/i = 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots$

Let us replace $\sum_{n=1}^{\infty} \overline{(i)}^{n} - 1/i$ its value and we get as a result this :

$$1= \quad 1/i.\sum_{n=1}^{\infty} \overline{(i)}^{n} = \sum_{n=1}^{\infty} \overline{(i)}^{n} - 1/i$$

$$1 \Longleftrightarrow 1/i.\sum_{n=1}^{\infty} \overline{(i)}^{n} - \sum_{n=1}^{\infty} \overline{(i)}^{n} = -1/i$$

$$1 \Longleftrightarrow (1/i - 1).\sum_{n=1}^{\infty} \overline{(i)}^{n} = -1/i$$

$$1 \Longleftrightarrow ((1-i)/i).\sum_{n=1}^{\infty} \overline{(i)}^{n} = -1/i$$

$$1 \Longleftrightarrow ((i-1)/i).\sum_{n=1}^{\infty} \overline{(i)}^{n} = 1/i$$

$$1 \Longleftrightarrow (i-1).\sum_{n=1}^{\infty} \overline{(i)}^{n} = 1$$

$1 \Longleftrightarrow \sum_{n=1}^{\infty} \overline{(\mathbf{i})}^{n} = 1/(\mathbf{i}-1)$ and this formula is The **Formula 60**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(i)^n}$ by 1/i until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(i)^n} = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots$

we multiply 1/i by $\sum_{n=1}^{\infty}\overline{(i)^n}$ and we get as a result this :

$$1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots\ldots$$

Then $1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = \sum_{n=1}^{\infty}\overline{(i)^n} - 1/i^1$

We are going to multiply again the result by 1/i and we get this :

$$\boxed{2 =}\ 1/i.(1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/i*1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/i*1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = \sum_{n=1}^{\infty}\overline{(i)^n} - 1/i^1 - 1/i^2$

We continue repeating multiplying the result by 1/i and we get this :

$$2 \Longleftrightarrow 1/i*(1/i*1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots)$$

$$2 \Longleftrightarrow 1/i*1/i*1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + \ldots\ldots\ldots\ldots\ldots$$

Then we get $2 \Longleftrightarrow 1/i*1/i*1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = \sum_{n=1}^{\infty}\overline{(i)^n} - 1/i^1 - 1/i^2 - 1/i^3$

As a result $2 \Longleftrightarrow 1/i*1/i*1/i.\sum_{n=1}^{\infty}\overline{(i)^n} = \sum_{n=1}^{\infty}\overline{(i)^n} - (1/i^1 + 1/i^2 + 1/i^3)$

We continue to repeat multiplying the result by 1/i until the infinity and we get

$$*1/i*1/i*1/i*\ldots\sum_{n=1}^{\infty}\overline{(i)^n} = \sum_{n=1}^{\infty}\overline{(i)^n} - (1/i^1+1/i^2 +1/i^3 +1/i^4 +1/i^5 +1/i^6 +1/i^7 +\ldots)$$

we have $\sum_{n=1}^{\infty}\overline{(i)^n} = 1/i^1+1/i^2 +1/i^3 +1/i^4 +1/i^5 +1/i^6 +1/i^7 + \ldots\ldots\ldots\ldots\ldots$

we replace the right side of the result by $\sum_{n=1}^{\infty}\overline{(i)^n}$ and we get this :

$$2 \Longleftrightarrow 1/i*1/i*1/i*\ldots\ldots\sum_{n=1}^{\infty}\overline{(i)^n} = \sum_{n=1}^{\infty}\overline{(i)^n} - \sum_{n=1}^{\infty}\overline{(i)^n}$$

As a result we get :

$$2 \Longleftrightarrow 1/i*1/i*1/i*\ldots\ldots\sum_{n=1}^{\infty}\overline{(i)^n} = 0$$

We have as a previous result: $\sum_{n=1}^{\infty}\overline{(i)^n} = 1/(i-1) \neq 0$

Therefore: **$1/i*1/i*1/i*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$**

Using **theorem and notion 1 of Zero** that states if we multiply a number 1/i by itself until the infinity, we get 0 zero as a result.

** Formula 61:

We have: $\sum_{n=1}^{\infty}\overline{(i)^{n}} = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(i)^{n}}$ by i until the infinity?

we have: $\sum_{n=1}^{\infty}\overline{(i)^{n}} = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...$

*i

we are going to multiply i by $\sum_{n=1}^{\infty}\overline{(i)^{n}}$ and we get as a result this :

$3 = i.\sum_{n=1}^{\infty}\overline{(i)^{n}} = 1 + (1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...)$

$3 \Longleftrightarrow i.\sum_{n=1}^{\infty}\overline{(i)^{n}} - 1 = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...$

We continue repeating multiplying the result by i and we get this :

$3 \Longleftrightarrow i*(i.\sum_{n=1}^{\infty}\overline{(i)^{n}} - 1 = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...)$

$3 \Longleftrightarrow i*i.\sum_{n=1}^{\infty}\overline{(i)^{n}} - i^1 = 1+(1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...)$

$3 \Longleftrightarrow i*i.\sum_{n=1}^{\infty}\overline{(i)^{n}} - i^1 - 1 = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...$

We continue repeating multiplying the result by i and we get this :

$3 \Longleftrightarrow i*(i*i.\sum_{n=1}^{\infty}\overline{(i)^{n}} - i^1 - 1 = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...)$

$3 \Longleftrightarrow i*i*i.\sum_{n=1}^{\infty}\overline{(i)^{n}} - i^2 - i^1 = 1+(1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...)$

We continue to repeat multiplying the result by i until the infinity and we get :

$3 \Longleftrightarrow i*i*i*....\sum_{n=1}^{\infty}\overline{(i)^{n}} - (i^1+i^2+i^3+i^4+i^5+...) = 1+(1/i^1+1/i^2+1/i^3+1/i^4+1/i^5+1/i^6+1/i^7+ ...)$

We have: $i*i*i*....\sum_{n=1}^{\infty}\overline{(i)^{n}} = 0$

Then the result will be:

$3 \Longleftrightarrow - (i^1+i^2+i^3+i^4+i^5+i^6+i^7+ ...) = 1+(1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...)$

$3 \Leftrightarrow (1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + ...) + 1 + (i^1+i^2+i^3+i^4+i^5+i^6+i^7+ ...) = 0$

$3 \Longleftrightarrow (i^{-1}+i^{-2}+i^{-3}+i^{-4}+i^{-5}+i^{-6}+i^{-7}+ ...) + i^0 + (i^1+i^2+i^3+i^4+i^5+i^6+i^7 ...) = 0$

Let $\sum_{n=1}^{+\infty} i^n = i^1+i^2+i^3+i^4+i^5+i^6+i^7+.........$

And let $\sum_{n=-1}^{-\infty} i^n = i^{-1}+i^{-2}+i^{-3}+i^{-4}+i^{-5}+i^{-6}+i^{-7}+.......$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} i^n + i^0 + \sum_{n=1}^{+\infty} i^n = 0$$

$$3 \Longleftrightarrow \quad \sum_{n\in Z} i^n = 0$$

At modern and new mathematics, and depending on the **theorem and notion 2 of Zero** , the sum of positive numbers is zero 0.

** The equality and similarity of Formula 59 and Formula 61:

Since Formula 59 is equal to : $\sum_{n=-1}^{-\infty} 1/i^n + 1/i^0 + \sum_{n=1}^{+\infty} 1/i^n = 0$

And Formula 61 is equal to : $\sum_{n=-1}^{-\infty} i^n + i^0 + \sum_{n=1}^{+\infty} i^n = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/i^n + 1/i^0 + \sum_{n=1}^{+\infty} 1/i^n = \sum_{n=-1}^{-\infty} i^n + i^0 + \sum_{n=1}^{+\infty} i^n = 0$

$$\boldsymbol{\sum_{n\in Z} 1/i^n = \sum_{n\in Z} i^n = 0}$$

PART 2

GENERAL FORMULAS 2

* PART 2 : GENERAL FORMULAS 2:

** Formula 62:

We have : $\sum_{n=1}^{\infty} even.p$ = $2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 + 2^{10}$ +.........

$\sum_{n=1}^{\infty} even.p$ =($2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11}$+...)+($2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12}$ +...)

Let us denote this infinite series $2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11}$+... by $\sum_{n=1}^{\infty} even.p\ (odd)$

Hence $\sum_{n=1}^{\infty} even.p\ (odd)$ = $2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11}$+...

Let us denote this infinite series $2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12}$ +... by $\sum_{n=2}^{\infty} even.p\ (Even)$

Hence $\sum_{n=2}^{\infty} even.p\ (Even)$ = $2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12}$ +...

We are going to multiply $\sum_{n=1}^{\infty} even.p\ (odd)$ by 2 and we get this:

2. $\sum_{n=1}^{\infty} even.p\ (odd)$ = $2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12}$ +...

Since 2. $\sum_{n=1}^{\infty} even.p\ (odd)$ = $\sum_{n=2}^{\infty} even.p\ (Even)$

And since $\sum_{n=1}^{\infty} even.p$ = $\sum_{n=1}^{\infty} even.p\ (odd)$ + $\sum_{n=2}^{\infty} even.p\ (Even)$

Therefore : $\sum_{n=1}^{\infty} even.p$ = $\sum_{n=1}^{\infty} even.p\ (odd)$ + 2.$\sum_{n=1}^{\infty} even.p\ (odd)$

As a result : $\sum_{n=1}^{\infty} even.p$ = 3.$\sum_{n=1}^{\infty} even.p\ (odd)$

And this formula is **Formula 62**

** Formula 63:

We have : $\sum_{n=1}^{\infty} even.p\ (odd)$ = $2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11}$+...

Now , let us calculate the sum of $\sum_{n=1}^{\infty} even.p\ (odd)$

we have: $\sum_{n=1}^{\infty} even.p\ (odd)$ = $2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11}$+...

$*2^2$ we are going to multiply 2^2 by $\sum_{n=1}^{\infty} even.p\ (odd)$ and we get as a result this :

$2^2.\sum_{n=1}^{\infty} even.p\ (odd)$ = $2^3 + 2^5 + 2^7 + 2^9 + 2^{11}$+...

We have: $\sum_{n=1}^{\infty} even.p\ (odd) - 2$ = $2^3 + 2^5 + 2^7 + 2^9 + 2^{11}$+...

Let us replace $\sum_{n=1}^{\infty} even.p\,(odd) - 2$ its value and we get as a result this :

1= $2^2.\sum_{n=1}^{\infty} even.p\,(odd) = \sum_{n=1}^{\infty} even.p\,(odd) - 2$

1 $\Longleftrightarrow$ $2^2.\sum_{n=1}^{\infty} even.p\,(odd)$ - $\sum_{n=1}^{\infty} even.p\,(odd) = -2$

1 $\Longleftrightarrow$ $(2^2 - 1).\sum_{n=1}^{\infty} even.p\,(odd) = -2$

1 $\Longleftrightarrow$ $3.\sum_{n=1}^{\infty} even.p\,(odd) = -2$

1 $\Longleftrightarrow$ $\sum_{n=1}^{\infty} even.p\,(odd) = -2/3$ and this formula is **Formula 63**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty} even.p\,(odd)$ by 2^2 until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{2^2}$ by itself until the infinity, we get 0 zero as a result.

$2^2 * 2^2 * 2^2 * \ldots\ldots \sum_{n=1}^{\infty} even.p\,(odd) = 0$

$\mathbf{2^2 * 2^2 * 2^2 * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

** Formula 64:

We have : $\sum_{n=1}^{\infty} even.p\,(odd) = 2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty} even.p\,(odd)$ by $1/2^2$ until the infinity?

we have: $\sum_{n=1}^{\infty} even.p\,(odd) = 2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \ldots$

$*1/2^2$ we are going to multiply $1/2^2$ by $\sum_{n=1}^{\infty} even.p\,(odd)$ and we get as a result this :

3= $1/2^2.\sum_{n=1}^{\infty} even.p\,(odd) = 1/2^1 + (2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \ldots\ldots)$

3 $\Longleftrightarrow$ $1/2^2.\sum_{n=1}^{\infty} even.p\,(odd) - 1/2^1 = 2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \ldots\ldots$

We continue repeating multiplying the result by **$1/2^2$** and we get this :

3 $\Longleftrightarrow$ $1/2^2 * (1/2^2.\sum_{n=1}^{\infty} even.p\,(odd) - 1/2^1 = 2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \ldots\ldots)$

3 $\Longleftrightarrow$ $1/2^2 * 1/2^2.\sum_{n=1}^{\infty} even.p\,(odd) - 1/2^3 = 1/2^1 + (2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \ldots)$

3 $\Longleftrightarrow$ $1/2^2 * 1/2^2.\sum_{n=1}^{\infty} even.p\,(odd) - 1/2^3 - 1/2^1 = 2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \ldots$

We continue repeating multiplying the result by **$1/2^2$** and we get this :

$3 \Leftrightarrow 1/2^2 * (1/2^2 * 1/2^2 . \sum_{n=1}^{\infty} even.p\ (odd) - 1/2^3 - 1/2^1 = 2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \dots)$

$3 \Leftrightarrow 1/2^2 * 1/2^2 * 1/2^2 . \sum_{n=1}^{\infty} even.p\ (odd) - 1/2^5 - 1/2^3 = 1/2^1 + (2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \dots)$

$3 \Leftrightarrow 1/2^2 * 1/2^2 * 1/2^2 . \sum_{n=1}^{\infty} even.p\ (odd) - (1/2^1 + 1/2^3 + 1/2^5) = 2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \dots$

We continue to repeat multiplying the result by **$1/2^2$** until the infinity and we get

$3 \Leftrightarrow 1/2^2 * 1/2^2 * 1/2^2 * \dots \sum_{n=1}^{\infty} even.p\ (odd) - (1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + \dots) = 2^1 + {}^3 + 2^5 + 2^7 + \dots$

We have: $1/2^2 * 1/2^2 * 1/2^2 * \dots . \sum_{n=1}^{\infty} even.p\ (odd) = 0$

Then the result will be:

$3 \Longleftrightarrow -(1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + \dots) = 2^1 + 2^3 + 2^5 + 2^7 + \dots$

$3 \Longleftrightarrow (2^1 + 2^3 + 2^5 + 2^7 + 2^9 + 2^{11} + \dots) + (1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + \dots) = 0$

$3 \Leftrightarrow (1/2^{-1} + 1/2^{-3} + 1/2^{-5} + 1/2^{-7} + 1/2^{-9} + \dots) + (1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + \dots) = 0$

Let $\sum_{n=1}^{+\infty} 1/2^n = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + \dots$, hence n= 2k+1 and $k \geq 0$ and $k \in \mathbb{N}$

And let $\sum_{n=-1}^{-\infty} 1/2^n = 1/2^{-1} + 1/2^{-3} + 1/2^{-5} + 1/2^{-7} + 1/2^{-9} + \dots$, hence n= 2k+1 and $k \leq -1$ and $k \in \mathbb{Z}$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/2^n + \sum_{n=1}^{+\infty} 1/2^n = 0$$

and this formula is **Formula 64**

** The extension of the theorem and notion 2 of Zero:

At classical mathematics , and as we all know that if we add the sum of natural numbers to the sum of its reciprocals, we will absolutely get as a result a positive result . At modern and new mathematics, and depending on the extension of the theorem and notion 2 of Zero , the sum of positive numbers plus its reciprocals will be zero 0. So we have broken the postulate that states **the sum of positive numbers plus its reciprocals is a positive number**

** Formula 65:

We have : $\sum_{n=1}^{\infty} \overline{even.p} = 1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 + 1/2^6 + 1/2^7 + 1/2^8 + 1/2^9 + 1/2^{10} + \dots$

Let us denote this infinite series : $1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + \dots$ by $\sum_{n=1}^{\infty} \overline{even.p\ (odd)}$

Hence $\sum_{n=1}^{\infty} \overline{even.p\ (odd)} = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + \dots$

Let us denote this infinite series : $1/2^2+1/2^4+1/2^6+1/2^8+1/2^{10}+\ldots$ by $\sum_{n=2}^{\infty}\overline{even.p\,(Even)}$

Hence $\sum_{n=2}^{\infty}\overline{even.p\,(Even)} = 1/2^2+1/2^4+1/2^6+1/2^8+1/2^{10}+\ldots$

Let us multiply $\sum_{n=1}^{\infty}\overline{even.p\,(odd)}$ by 1/2 we will get :

$1/2.\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = 1/2^2+1/2^4+1/2^6+1/2^8+1/2^{10}+\ldots$

Then :$1/2.\sum_{n=1}^{\infty}\overline{even.p\,(odd)}=1/2^2+1/2^4+1/2^6+1/2^8+1/2^{10}+\ldots=\sum_{n=2}^{\infty}\overline{even.p\,(Even)}$

$\sum_{n=1}^{\infty}\overline{even.p} = \sum_{n=1}^{\infty}\overline{even.p\,(odd)} + \sum_{n=2}^{\infty}\overline{even.p\,(Even)}$

$\sum_{n=1}^{\infty}\overline{even.p} = \sum_{n=1}^{\infty}\overline{even.p\,(odd)} + 1/2.\sum_{n=1}^{\infty}\overline{even.p\,(odd)}$

$$\boldsymbol{\sum_{n=1}^{\infty}\overline{even.p} = 3/2.\sum_{n=1}^{\infty}\overline{even.p\,(odd)}}$$

and this formula is **Formula 65**

** Formula 66:

we have: $\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = 1/2^1+1/2^3+1/2^5+1/2^7+1/2^9+1/2^{11}+\ldots$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{even.p\,(odd)}$

we have: $\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = 1/2^1+1/2^3+1/2^5+1/2^7+1/2^9+1/2^{11}+\ldots$

$*1/2^2$ we are going to multiply $1/2^2$ by $\sum_{n=1}^{\infty}\overline{even.p\,(odd)}$ and we get as a result this :

$1/2^2.\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = 1/2^3+1/2^5+1/2^7+1/2^9+1/2^{11}+\ldots$

We have: $\sum_{n=1}^{\infty}\overline{even.p\,(odd)} - 1/2 = 1/2^3+1/2^5+1/2^7+1/2^9+1/2^{11}+\ldots$

Let us replace $\sum_{n=1}^{\infty}\overline{even.p\,(odd)} - 1/2$ its value and we get as a result this :

1= $1/2^2.\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = \sum_{n=1}^{\infty}\overline{even.p\,(odd)} - 1/2$

1 $\Longleftrightarrow 1/2^2.\sum_{n=1}^{\infty}\overline{even.p\,(odd)} - \sum_{n=1}^{\infty}\overline{even.p\,(odd)} = -1/2$

1 $\Longleftrightarrow ((1-2^2)/2^2).\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = -1/2$

1 $\Longleftrightarrow ((2^2-1)/2^2).\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = 1/2$

1 $\Longleftrightarrow (2^2-1).\sum_{n=1}^{\infty}\overline{even.p\,(odd)} = 2$

1 $\Longleftrightarrow \sum_{n=1}^{\infty}\overline{even.p\,(odd)} = 2/(2^2-1)$

$\sum_{n=1}^{\infty} \overline{even.p\,(odd)} = 2/3$ and this formula is **Formula 66**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty} \overline{even.p\,(odd)}$ by $1/2^2$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number $1/2^2$ by itself until the infinity, we get 0 zero as a result.

$1/2^2*1/2^2*1/2^2*......\sum_{n=1}^{\infty} \overline{even.p\,(odd)} = 0$

$1/2^2*1/2^2*1/2^2*.. = 0$

** Formula 67:

We have : $\sum_{n=1}^{\infty} \overline{even.p\,(odd)} = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty} \overline{even.p\,(odd)}$ by 2^2 until the infinity?</u>

we have: $\sum_{n=1}^{\infty} \overline{even.p\,(odd)} = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...$

$*2^2$ we are going to multiply 2^2 by $\sum_{n=1}^{\infty} \overline{even.p\,(odd)}$ and we get as a result this :

$3 = \ 2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} = 2^1 + (1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...)$

$3 \Longleftrightarrow 2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - 2^1 = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...$

We continue repeating multiplying the result by $\mathbf{2^2}$ and we get this :

$3 \Longleftrightarrow 2^2*(2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - 2^1 = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...)$

$3 \Longleftrightarrow 2^2*2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - 2^3 = 2^1 + (1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...)$

$3 \Longleftrightarrow 2^2*2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - 2^3 - 2^1 = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...$

We continue repeating multiplying the result by $\mathbf{2^2}$ and we get this :

$3 \Leftrightarrow 2^2*(2^2*2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - 2^3 - 2^1 = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...)$

$3 \Leftrightarrow 2^2*2^2*2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - 2^5 - 2^3 = 2^1 + (1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...)$

$3 \Leftrightarrow 2^2*2^2*2^2.\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - (2^1 + 2^3 + 2^5) = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + 1/2^9 + 1/2^{11} + ...)$

We continue to repeat multiplying the result by $\mathbf{2^2}$ until the infinity and we get

$3 \Leftrightarrow 2^2*2^2*2^2*...\sum_{n=1}^{\infty} \overline{even.p\,(odd)} - (2^1 + 2^3 + 2^5 + 2^7 + ...) = 1/2^1 + 1/2^3 + 1/2^5 + 1/2^7 + ...$

We have: $2^2*2^2*2^2*....\sum_{n=1}^{\infty} \overline{even.p\ (odd)} = 0$

Then the result will be:

$3 \Longleftrightarrow -(2^1+2^3+2^5+2^7+...) = 1/2^1+1/2^3+1/2^5+1/2^7+...$

$3 \Longleftrightarrow (1/2^1+1/2^3+1/2^5+1/2^7+1/2^9+1/2^{11}...) + (2^1+2^3+2^5+2^7+2^9+2^{11}+...) = 0$

$3 \Longleftrightarrow (2^{-1}+2^{-3}+2^{-5}+2^{-7}+2^{-9}+ ...)+(2^1+2^3+2^5+2^7+2^9+...) = 0$

Let $\sum_{n=1}^{+\infty} 2^n = 2^1+2^3+2^5+2^7+2^9+...$, hence n= 2k+1 and $k \geq 0$ and $k \in \mathbb{N}$

And let $\sum_{n=-1}^{-\infty} 2^n = 2^{-1}+2^{-3}+2^{-5}+2^{-7}+2^{-9}+...$, hence n= 2k+1 and $k \leq -1$ and $k \in \mathbb{Z}$

Then the result will be:

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 2^n + \sum_{n=1}^{+\infty} 2^n = 0$$

and this formula is **Formula 67**

** The equality and similarity of Formula 64 and Formula 67:

Since Formula 64 is equal to : $\sum_{n=-1}^{-\infty} 1/2^n + \sum_{n=1}^{+\infty} 1/2^n = 0$

And Formula 67 is equal to : $\sum_{n=-1}^{-\infty} 2^n + \sum_{n=1}^{+\infty} 2^n = 0$

Therefore $\sum_{n=-1}^{-\infty} 1/2^n + \sum_{n=1}^{+\infty} 1/2^n = \sum_{n=-1}^{-\infty} 2^n + \sum_{n=1}^{+\infty} 2^n = 0$

** Formula 68:

We have : $\sum_{n=2}^{\infty} even.p\ (Even) = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+...$

Now , let us calculate the sum of $\sum_{n=2}^{\infty} even.p\ (Even)$

we have: $\sum_{n=2}^{\infty} even.p\ (Even) = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+...$

$*2^2$ we are going to multiply 2^2 by $\sum_{n=2}^{\infty} even.p\ (Even)$ and we get as a result this :

$2^2.\sum_{n=2}^{\infty} even.p\ (Even) = 2^4+2^6+2^8+2^{10}+2^{12}+...$

We have: $\sum_{n=2}^{\infty} even.p\ (Even) - 2^2 = 2^4+2^6+2^8+2^{10}+2^{12}+...$

Let us replace $\sum_{n=2}^{\infty} even.p\ (Even) - 2^2$ its value and we get as a result this :

$1= \quad 2^2.\sum_{n=2}^{\infty} even.p\,(Even) = \sum_{n=2}^{\infty} even.p\,(Even) - 2^2$

$1 \Longleftrightarrow 2^2.\sum_{n=2}^{\infty} even.p\,(Even) - \sum_{n=2}^{\infty} even.p\,(Even) = -2^2$

$1 \Longleftrightarrow (2^2-1).\sum_{n=2}^{\infty} even.p\,(Even) = -2^2$

$1 \Longleftrightarrow 3.\sum_{n=2}^{\infty} even.p\,(Even) = -4$

$1 \Longleftrightarrow$ $\boldsymbol{\sum_{n=2}^{\infty} even.p\,(Even) = -4/3}$ and this formula is **Formula 68**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty} even.p\,(Even)$ by 2^2 until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{2^2}$ by itself until the infinity, we get 0 zero as a result.

$2^2*2^2*2^2*\ldots\ldots\sum_{n=2}^{\infty} even.p\,(Even) = 0$

$\mathbf{2^2*2^2*2^2*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

** Formula 69:

We have : $\sum_{n=2}^{\infty} even.p\,(Even) = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty} even.p\,(Even)$ by $1/2^2$ until the infinity?</u>

we have: $\sum_{n=2}^{\infty} even.p\,(Even) = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots$

$*1/2^2$ we are going to multiply $1/2^2$ by $\sum_{n=2}^{\infty} even.p\,(Even)$ and we get as a result this :

$3= \quad 1/2^2.\sum_{n=2}^{\infty} even.p\,(Even) = 1 + (2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots..)$

$3 \Longleftrightarrow 1/2^2.\sum_{n=2}^{\infty} even.p\,(Even) - 1 = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots..$

We continue repeating multiplying the result by $\mathbf{1/2^2}$ and we get this :

$3 \Longleftrightarrow 1/2^2*(1/2^2.\sum_{n=2}^{\infty} even.p\,(Even) - 1 = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots..)$

$3 \Longleftrightarrow 1/2^2*1/2^2.\sum_{n=2}^{\infty} even.p\,(Even) - 1/2^2 = 1+(2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots)$

$3 \Longleftrightarrow 1/2^2*1/2^2.\sum_{n=2}^{\infty} even.p\,(Even) - 1/2^2 - 1 = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots$

We continue repeating multiplying the result by $\mathbf{1/2^2}$ and we get this :

$3\Leftrightarrow 1/2^2*(1/2^2*1/2^2.\sum_{n=2}^{\infty} even.p\,(Even) - 1/2^2 - 1 = 2^2+2^4+2^6+2^8+2^{10}+2^{12}+\ldots)$

$3 \Leftrightarrow 1/2^2 * 1/2^2 * 1/2^2 . \sum_{n=2}^{\infty} even.p\,(Even) - 1/2^4 - 1/2^2 = 1 + (2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12} + \dots)$

$3 \Leftrightarrow 1/2^2 * 1/2^2 * 1/2^2 . \sum_{n=2}^{\infty} even.p\,(Even) - (1/2^2 + 1/2^4) = 1 + (2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12} + \dots)$

We continue to repeat multiplying the result by **$1/2^2$** until the infinity and we get

$3 \Leftrightarrow 1/2^2 * 1/2^2 * 1/2^2 * \dots \sum_{n=2}^{\infty} even.p\,(Even) - (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + \dots) = 1 + (2^2 + ^4 + 2^6 + 2^8 + \dots)$

Using **Theorem and notion 1 of Zero** , we have $1/2^2 * 1/2^2 * 1/2^2 * \dots . \sum_{n=2}^{\infty} even.p\,(Even) = 0$

Then the result will be:

$3 \Longleftrightarrow -(1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + \dots) = 1 + (2^2 + 2^4 + 2^6 + 2^8 + \dots)$

$3 \Longleftrightarrow (2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12} + \dots) + 1 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \dots) = 0$

$3 \Leftrightarrow (1/2^{-2} + 1/2^{-4} + 1/2^{-6} + 1/2^{-8} + 1/2^{-10} + \dots) + 1/2^0 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + \dots) = 0$

Let $\sum_{n=1}^{+\infty} 1/2^{2n} = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + \dots$

And let $\sum_{n=-1}^{-\infty} 1/2^{2n} = 1/2^{-2} + 1/2^{-4} + 1/2^{-6} + 1/2^{-8} + 1/2^{-10} + \dots$

Then the result will be:

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 1/2^{2n} + 1/2^0 + \sum_{n=1}^{+\infty} 1/2^{2n} = 0$$

$$3 \Longleftrightarrow \sum_{n \in Z} 1/2^{2n}$$

and this formula is **Formula 69**

** Formula 70:

we have: $\sum_{n=2}^{\infty} \overline{even.p\,(Even)} = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \dots$

Now , let us calculate the sum of $\sum_{n=2}^{\infty} \overline{even.p\,(Even)}$

we have: $\sum_{n=2}^{\infty} \overline{even.p\,(Even)} = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \dots$

$*1/2^2$ we are going to multiply $1/2^2$ by $\sum_{n=2}^{\infty} \overline{even.p\,(Even)}$ and we get as a result this :

$1/2^2 . \sum_{n=2}^{\infty} \overline{even.p\,(Even)} = 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \dots$

We have: $\sum_{n=2}^{\infty} \overline{even.p\,(Even)} - 1/2^2 = 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \dots$

Let us replace $\sum_{n=2}^{\infty} \overline{even.p\,(Even)} - 1/2^2$ its value and we get as a result this :

1= $1/2^2.\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = \sum_{n=2}^{\infty} \overline{even.p\ (Even)} - 1/2^2$

1 $\Longleftrightarrow$ $1/2^2.\sum_{n=2}^{\infty} \overline{even.p\ (Even)}$ - $\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = -1/2^2$

1 $\Longleftrightarrow$ $(1/2^2 - 1).\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = -1/2^2$

1 $\Longleftrightarrow$ $((1 - 2^2)/2^2).\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = -1/2^2$

1 $\Longleftrightarrow$ $((2^2 - 1)/2^2).\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 1/2^2$

1 $\Longleftrightarrow$ $(2^2 - 1).\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 1$

1 $\Longleftrightarrow$ $\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 1/(2^2 - 1)$

$\boldsymbol{\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 1/3}$ and this formula is **Formula 70**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty} \overline{even.p\ (Even)}$ by $1/2^2$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/2^2$** by itself until the infinity, we get 0 zero as a result.

$1/2^2*1/2^2*1/2^2*......\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 0$

$1/2^2*1/2^2*1/2^2*$...................................... = 0

** Formula 71:

We have : $\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + ...$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty} \overline{even.p\ (Even)}$ by 2^2 until the infinity?

we have: $\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + ...$

$*2^2$ we are going to multiply 2^2 by $\sum_{n=2}^{\infty} \overline{even.p\ (Even)}$ and we get as a result this :

3= $2^2.\sum_{n=2}^{\infty} \overline{even.p\ (Even)} = 1 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + ...)$

3 $\Longleftrightarrow$ $2^2.\sum_{n=2}^{\infty} \overline{even.p\ (Even)} - 1 = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + ...$

We continue repeating multiplying the result by **2^2** and we get this :

3 $\Longleftrightarrow$ $2^2*(2^2.\sum_{n=2}^{\infty} \overline{even.p\ (Even)} - 1 = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + ...)$

3 $\Longleftrightarrow$ $2^2*2^2.\sum_{n=2}^{\infty} \overline{even.p\ (Even)} - 2^2 = 1 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + ...)$

$3 \Leftrightarrow 2^2 * 2^2 . \sum_{n=2}^{\infty} \overline{even.p\,(Even)} - 2^2 - 1 = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \ldots$

We continue repeating multiplying the result by $\mathbf{2^2}$ and we get this :

$3 \Leftrightarrow 2^2 * (2^2 * 2^2 . \sum_{n=2}^{\infty} \overline{even.p\,(Even)} - 2^2 - 1 = 1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \ldots)$

$3 \Leftrightarrow 2^2 * 2^2 * 2^2 . \sum_{n=2}^{\infty} \overline{even.p\,(Even)} - 2^4 - 2^2 = 1 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} + \ldots)$

$3 \Leftrightarrow 2^2 * 2^2 * 2^2 . \sum_{n=2}^{\infty} \overline{even.p\,(Even)} - (2^2 + 2^4) = 1 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + \ldots)$

We continue to repeat multiplying the result by $\mathbf{2^2}$ until the infinity and we get

$3 \Leftrightarrow 2^2 * 2^2 * 2^2 * \ldots \sum_{n=2}^{\infty} \overline{even.p\,(Even)} - (2^2 + 2^4 + 2^6 + 2^8 + \ldots) = 1 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + \ldots)$

Using **theorem and notion 1 of Zero** , we have: $2^2 * 2^2 * 2^2 * \ldots \sum_{n=2}^{\infty} \overline{even.p\,(Even)} = 0$

Then the result will be:

$3 \Longleftrightarrow -(2^2 + 2^4 + 2^6 + 2^8 + \ldots) = 1 + (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + \ldots)$

$3 \Longleftrightarrow (1/2^2 + 1/2^4 + 1/2^6 + 1/2^8 + 1/2^{10} + 1/2^{12} \ldots) + 1 + (2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + 2^{12} + \ldots) = 0$

$3 \Leftrightarrow (2^{-2} + 2^{-4} + 2^{-6} + 2^{-8} + 2^{-10} + \ldots) + (2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + \ldots) = 0$

Let $\sum_{n=1}^{+\infty} 2^{2n} = 2^2 + 2^4 + 2^6 + 2^8 + 2^{10} + \ldots$

And let $\sum_{n=-1}^{-\infty} 2^{2n} = 2^{-2} + 2^{-4} + 2^{-6} + 2^{-8} + 2^{-10} + \ldots$

Then the result will be:

$$3 \Longleftrightarrow \quad \boldsymbol{\sum_{n=-1}^{-\infty} 2^{2n} + 2^0 + \sum_{n=1}^{+\infty} 2^{2n} = 0}$$

$$3 \Longleftrightarrow \quad \boldsymbol{\sum_{n \in Z} 2^{2n}}$$

and this formula is **Formula 71**

** The equality and similarity of Formula 69 and Formula 71:

Since Formula 69 is equal to : $\sum_{n=-1}^{-\infty} 1/2^{2n} + 1/2^0 + \sum_{n=1}^{+\infty} 1/2^{2n} = 0$

And Since Formula 71 is equal to : $\sum_{n=-1}^{-\infty} 2^{2n} + 2^0 + \sum_{n=1}^{+\infty} 2^{2n} = 0$

Therefore $\boldsymbol{\sum_{n=-1}^{-\infty} 1/2^{2n} + 1/2^0 + \sum_{n=1}^{+\infty} 1/2^{2n} = \sum_{n=-1}^{-\infty} 2^{2n} + 2^0 + \sum_{n=1}^{+\infty} 2^{2n} = 0}$

Then : $\sum_{n \in Z} 1/2^{2n} = \sum_{n \in Z} 2^{2n} = 0$

** Formula 72:

We have: $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p = 2^{s} + 2^{2s} + 2^{3s} + 2^{4s} + 2^{5s} + 2^{6s} + 2^{7s} + 2^{8s} + 2^{9s} + 2^{10s} + \ldots\ldots\ldots$

$\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p = (2^{s} + 2^{3s} + 2^{5s} + 2^{7s} + 2^{9s} + 2^{11s} + \ldots) + (2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots)$

Let us denote this infinite series $2^{s} + 2^{3s} + 2^{5s} + 2^{7s} + 2^{9s} + 2^{11s} + \ldots$ by $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd)$

Hence $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd) = 2^{s} + 2^{3s} + 2^{5s} + 2^{7s} + 2^{9s} + 2^{11s} + \ldots$

Let us denote this infinite series $2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$ by $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$

Hence $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = 2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$

We are going to multiply $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd)$ by 2^{s} and we get this:

$2^{s}. \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd) = 2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$

Since $2^{s}. \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd) = \sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$

And since $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd) + \sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$

Therefore : $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd) + 2^{s}. \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd)$

As a result : $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p = (1+2^{s}). \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd)$

And this formula is **Formula 72**

** Formula 73:

We have : $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd) = 2^{s} + 2^{3s} + 2^{5s} + 2^{7s} + 2^{9s} + 2^{11s} + \ldots$

Now , let us calculate the sum of $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p(odd)$

we have: $\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd)$= $2^s+2^{3s}+2^{5s}+2^{7s}+2^{9s}+2^{11s}+...$

$*2^{2s}$ we are going to multiply 2^{2s} by $\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd)$ and we get as a result this

$$2^{2s}.\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd)= 2^{3s}+2^{5s}+2^{7s}+2^{9s}+2^{11s}+...$$

We have: $\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd) - 2^s = 2^{3s}+2^{5s}+2^{7s}+2^{9s}+2^{11s}+...$

Let us replace $\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd) - 2^s$ its value and we get as a result this :

$$1= \quad 2^{2s}.\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd)= \sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd) - 2^s$$

$$1 \Longleftrightarrow 2^{2s}.\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd) - \sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd) = -2^s$$

$$1 \Longleftrightarrow (2^{2s}-1).\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd)= -2^s$$

$$1 \Longleftrightarrow \boldsymbol{\sum_{\substack{n=s\\s/s}}^{\infty} even.p(odd)= -2^s/(2^{2s}-1)}$$ and this formula is **Formula 73**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd)$ by 2^2 until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{2^{2s}}$ by itself until the infinity, we get 0 zero as a result.

$$2^{2s}*2^{2s}*2^{2s}*\ldots\ldots \sum_{\substack{n=1\\s/s}}^{\infty} even.p(odd)= 0$$

$$\mathbf{2^{2s}*2^{2s}*2^{2s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

** Formula 74:

We have : $\sum_{\substack{n=s\\s/s}}^{\infty} even.p(odd) = 2^s+2^{3s}+2^{5s}+2^{7s}+2^{9s}+2^{11s}+...$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty} even.p\,(odd)$ by $1/2^2$ until the infinity?

Using **theorem and notion 2 of Zero** , we get that :

3 = $(2^s+2^{3s}+2^{5s}+2^{7s}+2^{9s}+2^{11s}+\ldots) + (1/2^s+1/2^{3s}+1/2^{5s}+1/2^{7s}+1/2^{9s}+1/2^{11s}+\ldots) = 0$

Hence $\sum_{n=1}^{+\infty} 1/2^{ns} = 1/2^s+1/2^{3s}+1/2^{5s}+1/2^{7s}+1/2^{9s}+\ldots$, and n= 2k+1 and $k \geq 0$ and $k \in N$

And $\sum_{n=-1}^{-\infty} 1/2^{ns} = 1/2^{-s}+1/2^{-3s}+1/2^{-5s}+1/2^{-7s}+1/2^{-9s}+\ldots$, and n= 2k+1 and $k \leq -1$ and $k \in Z$

Then the result will be:

$$3 \Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/2^{ns} + \sum_{n=1}^{+\infty} 1/2^{ns} = 0$$

and this formula is **Formula 74**

** Formula 75:

We have :$\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} = 1/2^s+1/2^{2s}+1/2^{3s}+1/2^{4s}+1/2^{5s}+1/2^{6s}+1/2^{7s}+1/2^{8s}+1/2^{9s}+1/2^{10s}+\ldots$

Let us denote this infinite series : $1/2^s+1/2^{3s}+1/2^{5s}+1/2^{7s}+1/2^{9s}+\ldots$ by $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)}$

Hence $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = 1/2^s+1/2^{3s}+1/2^{5s}+1/2^{7s}+1/2^{9s}+\ldots$

Let us denote this infinite series : $1/2^{2s}+1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+\ldots$ by $\sum_{\substack{n=2\\ s/s}}^{\infty} \overline{even.p(Even)}$

Hence $\sum_{\substack{n=2\\ s/s}}^{\infty} \overline{even.p(Even)} = 1/2^{2s}+1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+\ldots$

Let us multiply $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)}$ by $1/2^s$ we will get :

$$1/2^s.\ \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = 1/2^{2s}+1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+\ldots$$

Then :$1/2^s.\ \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = 1/2^{2s}+1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+\ldots = \sum_{\substack{n=2\\ s/s}}^{\infty} \overline{even.p(Even)}$

$$\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} + \sum_{\substack{n=2\\ s/s}}^{\infty} \overline{even.p(Even)}$$

$$\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} + 1/2^s.\ \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)}$$

$$\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} = (1 + 1/2^s).\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)}$$

$$\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} = ((2^s+1)/2^s).\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)}$$

and this formula is **Formula 75**

** Formula 76:

we have: $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = 1/2^s + 1/2^{3s} + 1/2^{5s} + 1/2^{7s} + 1/2^{9s} + 1/2^{11s} + \ldots$

Now , let us calculate the sum of $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)}$

we have: $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = 1/2^s + 1/2^{3s} + 1/2^{5s} + 1/2^{7s} + 1/2^{9s} + 1/2^{11s} + \ldots$

$*1/2^{2s}$ we are going to multiply $1/2^{2s}$ by $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)}$ and we get as a result this :

$$1/2^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = 1/2^{3s} + 1/2^{5s} + 1/2^{7s} + 1/2^{9s} + 1/2^{11s} + \ldots$$

We have: $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} - 1/2^s = 1/2^{3s} + 1/2^{5s} + 1/2^{7s} + 1/2^{9s} + 1/2^{11s} + \ldots$

Let us replace $\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} - 1/2^s$ its value and we get as a result this :

$$1 = \quad 1/2^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} - 1/2^s$$

$$1 \Longleftrightarrow 1/2^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} - \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = -1/2^s$$

$$2 \Longleftrightarrow (1/2^{2s} - 1).\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = -1/2^s$$

$$2 \Longleftrightarrow ((1 - 2^{2s})/2^{2s}).\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = -1/2^s$$

$$1 \Longleftrightarrow (1 - 2^{2s}).\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = -2^s$$

$$1 \Longleftrightarrow \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = -2^s/(1 - 2^{2s})$$

$$\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p(odd)} = 2^s/(2^{2s} - 1)$$

and this formula is **Formula 76**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1\\s/s}}^{\infty} \overline{even.p(odd)}$ by $1/2^{2s}$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/2^{2s}$** by itself until the infinity, we get 0 zero as a result.

$$1/2^{2s} * 1/2^{2s} * 1/2^{2s} * \ldots\ldots \sum_{\substack{n=1\\s/s}}^{\infty} \overline{even.p(odd)} = 0$$

$$\mathbf{1/2^{2s}*1/2^{2s}*1/2^{2s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

** Formula 77:

We have : $\sum_{\substack{n=1\\s/s}}^{\infty} \overline{even.p(odd)} = 1/2^{s} + 1/2^{3s} + 1/2^{5s} + 1/2^{7s} + 1/2^{9s} + 1/2^{11s} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1\\s/s}}^{\infty} \overline{even.p(odd)}$ by 2^{2s} until the infinity?

Using **theorem and notion 2 of Zero** , we get that :

$$(1/2^{s} + 1/2^{3s} + 1/2^{5s} + 1/2^{7s} + 1/2^{9s} + 1/2^{11s} \ldots) + (2^{s} + 2^{3s} + 2^{5s} + 2^{7s} + 2^{9s} + 2^{11s} + \ldots) = 0$$

Hence $\sum_{n=1}^{+\infty} 2^{ns} = 2^{s} + 2^{3s} + 2^{5s} + 2^{7s} + 2^{9s} + \ldots$, hence n= 2k+1 and $k \geq 0$ and $k \in \mathrm{N}$

And $\sum_{n=-1}^{-\infty} 2^{ns} = 2^{-s} + 2^{-3s} + 2^{-5s} + 2^{-7s} + 2^{-9s} + \ldots$, hence n= 2k+1 and $k \leq -1$ and $k \in \mathrm{Z}$

Then the result will be : $\mathbf{\sum_{n=-1}^{-\infty} 2^{ns} + \sum_{n=1}^{+\infty} 2^{ns} = 0}$

and this formula is **Formula 77**

** The equality and similarity of Formula 74 and Formula 77:

Since Formula 74 is equal to : $\sum_{n=-1}^{-\infty} 1/2^{ns} + \sum_{n=1}^{+\infty} 1/2^{ns} = 0$

And Formula 77 is equal to : $\sum_{n=-1}^{-\infty} 2^{ns} + \sum_{n=1}^{+\infty} 2^{ns} = 0$

Therefore $\mathbf{\sum_{n=-1}^{-\infty} 1/2^{ns} + \sum_{n=1}^{+\infty} 1/2^{ns} = \sum_{n=-1}^{-\infty} 2^{ns} + \sum_{n=1}^{+\infty} 2^{ns} = 0}$

** Formula 78:

We have : $\sum_{\substack{n=2\\s/s}}^{\infty} even.p(Even) = 2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$

Now , let us calculate the sum of $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$

we have: $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = 2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$

$*2^{2s}$

we are going to multiply 2^{2s} by $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$ and we get as a result this :

$$2^{2s}.\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$$

We have: $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) - 2^{2s} = 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$

Let us replace $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) - 2^{2s}$ its value and we get as a result this :

$$1 = \quad 2^{2s}.\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = \sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) - 2^{2s}$$

$$1 \Longleftrightarrow 2^{2s}.\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) - \sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = -2^{2s}$$

$$1 \Longleftrightarrow (2^{2s} - 1).\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = -2^{2s}$$

$1 \Longleftrightarrow \sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$ $\mathbf{= -2^{2s}/(2^{2s} - 1)}$ and this formula is **Formula 78**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$ by 2^{2s} until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{2^{2s}}$ by itself until the infinity, we get 0 zero as a result.

$$2^{2s} * 2^{2s} * 2^{2s} * \ldots\ldots \sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = 0$$

$\mathbf{2^{2s} * 2^{2s} * 2^{2s} * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

** Formula 79:

We have : $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even) = 2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2 \\ s/s}}^{\infty} even.p(Even)$ by $1/2^{2s}$ until the infinity?

Using **theorem and notion 2 of Zero** , we get :

$(2^{2s}+2^{4s}+2^{6s}+2^{8s}+2^{10s}+2^{12s}+\ldots) + 1+ (1/2^{2s}+1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+1/2^{12s}+\ldots) = 0$

Then the result will be:

3 $\Longleftrightarrow \quad \sum_{n=-1}^{-\infty} 1/2^{2ns} + 1/2^{0s} + \sum_{n=1}^{+\infty} 1/2^{2ns} = 0$

3 $\Longleftrightarrow \quad \sum_{n \in Z} 1/2^{2ns}$

and this formula is **Formula 79**

** Formula 80:

we have: $\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = 1/2^{2s}+1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+1/2^{12s}+\ldots$

Now , let us calculate the sum of $\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)}$

we have: $\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = 1/2^{2s}+1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+1/2^{12s}+\ldots$

$*1/2^{2s}$ we are going to multiply $1/2^{2s}$ by $\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)}$ and we get as a result this :

$1/2^{2s}.\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = 1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+1/2^{12s}+\ldots$

We have: $\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} - 1/2^{2s} = 1/2^{4s}+1/2^{6s}+1/2^{8s}+1/2^{10s}+1/2^{12s}+\ldots$

Let us replace $\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} - 1/2^{2s}$ its value and we get as a result this :

1= $\quad 1/2^{2s}.\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = \sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} - 1/2^{2s}$

1 $\Longleftrightarrow \quad 1/2^{2s}.\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} - \sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = -1/2^{2s}$

1 $\Longleftrightarrow \quad (1/2^{2s}-1).\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = -1/2^{2s}$

1 $\Longleftrightarrow \quad ((1-2^{2s})/2^{2s}).\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = -1/2^{2s}$

1 $\Longleftrightarrow \quad ((2^{2s}-1)/2^{2s}).\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = 1/2^{2s}$

1 $\Longleftrightarrow \quad (2^{2s}-1).\sum_{\substack{n=2 \\ s/s}}^{\infty} \overline{even.p(Even)} = 1$

$\sum_{\substack{n=2\\ s/s}}^{\infty} \overline{\boldsymbol{even.p(Even)}} = 1/(2^{2s}-1)$ and this formula is **Formula 80**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2\\ s/s}}^{\infty} \overline{\boldsymbol{even.p(Even)}}$ by $1/2^{2s}$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/2^{2s}$** by itself until the infinity, we get 0 zero as a result.

$$1/2^{2s} * 1/2^{2s} * 1/2^{2s} * \ldots\ldots \sum_{\substack{n=2\\ s/s}}^{\infty} \overline{even.p(Even)} = 0$$

$$\mathbf{1/2^{2s} * 1/2^{2s} * 1/2^{2s} * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

** Formula 81:

We have : $\sum_{\substack{n=2\\ s/s}}^{\infty} \overline{even.p(Even)} = 1/2^{2s} + 1/2^{4s} + 1/2^{6s} + 1/2^{8s} + 1/2^{10s} + 1/2^{12s} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2\\ s/s}}^{\infty} \overline{\boldsymbol{even.p(Even)}}$ by 2^{2s} until the infinity?

Using **theorem and notion 2 of Zero** , we get this :

$$(1/2^{2s} + 1/2^{4s} + 1/2^{6s} + 1/2^{8s} + 1/2^{10s} + 1/2^{12s} \ldots) + 1 + (2^{2s} + 2^{4s} + 2^{6s} + 2^{8s} + 2^{10s} + 2^{12s} + \ldots) = 0$$

Then the result will be:

$$\sum_{n=-1}^{-\infty} \mathbf{2^{2ns}} + \mathbf{2^{0s}} + \sum_{n=1}^{+\infty} \mathbf{2^{2ns}} = \mathbf{0}$$

$$\sum_{n \in Z} \mathbf{2^{2ns}}$$

and this formula is **Formula 81**

** The equality and similarity of Formula 79 and Formula 81:

Since Formula 79 is equal to : $\sum_{n=-1}^{-\infty} 1/2^{2ns} + 1/2^{0s} + \sum_{n=1}^{+\infty} 1/2^{2ns} = 0$

And Since Formula 81 is equal to : $\sum_{n=-1}^{-\infty} 2^{2ns} + 2^{0s} + \sum_{n=1}^{+\infty} 2^{2ns} = 0$

Therefore $\sum_{n=-1}^{-\infty} \mathbf{1/2^{2ns}} + \mathbf{1/2^{0s}} + \sum_{n=1}^{+\infty} \mathbf{1/2^{2ns}} = \sum_{n=-1}^{-\infty} \mathbf{2^{2ns}} + \mathbf{2^{0s}} + \sum_{n=1}^{+\infty} \mathbf{2^{2ns}} = \mathbf{0}$

Then : $\sum_{n \in Z} \mathbf{1/2^{2ns}} = \sum_{n \in Z} \mathbf{2^{2ns}} = \mathbf{0}$

** Formula 82:

We have : $\sum_{n=1}^{\infty}(P)^{n} = P^1 + P^2 + P^3 + P^4 + P^5 + P^6 + P^7 + P^8 + P^9 + P^{10} + \ldots\ldots\ldots$

$\sum_{n=1}^{\infty}(P)^{n} = (P^1 + P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots) + (P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots)$

Let us denote this infinite series $P^1 + P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots$ by $\sum_{n=1}^{\infty}(P)^{n}$ (odd)

Hence $\sum_{n=1}^{\infty}(P)^{n}$ (odd)= $P^1 + P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots$

Let us denote this infinite series $P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$ by $\sum_{n=2}^{\infty}(P)^{n}$ (Even)

Hence $\sum_{n=2}^{\infty}(P)^{n}$ (Even)= $P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$

We are going to multiply $\sum_{n=1}^{\infty}(P)^{n}$ (odd)by P and we get this:

P. $\sum_{n=1}^{\infty}(P)^{n}$ (odd)= $P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$

Since P. $\sum_{n=1}^{\infty}(P)^{n}$ (odd)=$\sum_{n=2}^{\infty}(P)^{n}$ (Even)

And since $\sum_{n=1}^{\infty}(P)^{n} = \sum_{n=1}^{\infty}(P)^{n}$ (odd)+ $\sum_{n=2}^{\infty}(P)^{n}$ (Even)

Therefore : $\sum_{n=1}^{\infty}(P)^{n} = \sum_{n=1}^{\infty}(P)^{n}$ (odd)+ P.$\sum_{n=1}^{\infty}(P)^{n}$ (odd)

As a result : **$\sum_{n=1}^{\infty}(P)^{n} = (1+P).\sum_{n=1}^{\infty}(P)^{n}$ (odd)**

And this formula is **Formula 82**

If P=3 , then $\sum_{n=1}^{\infty}(3)^{n} = (1+3).\ \sum_{n=1}^{\infty}(3)^{n}$ (odd) $= 4.\sum_{n=1}^{\infty}(3)^{n}$ (odd)

** Formula 83:

We have : $\sum_{n=1}^{\infty}(P)^{n}$ (odd) = $P^1 + P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(P)^{n}$ (odd)

we have: $\sum_{n=1}^{\infty}(P)^{n}$ (odd) = $P^1 + P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots$

$*P^2$ we are going to multiply P^2 by $\sum_{n=1}^{\infty}(P)^{n}$ (odd) and we get as a result this :

$P^2.\sum_{n=1}^{\infty}(P)^{n}$ (odd) = $P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots$

We have: $\sum_{n=1}^{\infty}(P)^n$ (odd) – P^1 = $P^3+P^5+P^7+P^9+P^{11}+\ldots$

Let us replace $\sum_{n=1}^{\infty}(P)^n$ (odd) – P^1 its value and we get as a result this :

1= $P^2.\sum_{n=1}^{\infty}(P)^n$ (odd) = $\sum_{n=1}^{\infty}(P)^n$ (odd) – P

1 $\Longleftrightarrow$ $P^2.\sum_{n=1}^{\infty}(P)^n$ (odd) - $\sum_{n=1}^{\infty}(P)^n$ (odd) = – P

1 $\Longleftrightarrow$ $(P^2 – 1).\sum_{n=1}^{\infty}(P)^n$ (odd) = – P

1 $\Longleftrightarrow$ $\sum_{n=1}^{\infty}(P)^n$ (odd) **= – P/(P² – 1)** and this formula is **Formula 83**

For example: If P = 3 , then $\sum_{n=1}^{\infty}(3)^n$ (odd) = $– 3/(3^2 – 1)$ = – 3/(9 -1)= – 3/8

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(P)^n$ (odd) by P^2 until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{P^2}$ by itself until the infinity, we get 0 zero as a result.

$P^2*P^2*P^2*\ldots\ldots\sum_{n=1}^{\infty}(P)^n$ (odd) = 0

P²*P²*P²*……………………………………… = 0

** Formula 84:

We have : $\sum_{n=1}^{\infty}(P)^n$ (odd) = $P^1+P^3+P^5+P^7+P^9+P^{11}+\ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(P)^n$ (odd) by $1/P^2$ until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

3 = $(P^1+P^3+P^5+P^7+P^9+P^{11}+\ldots) + (1/P^1+1/P^3+1/P^5+1/P^7+1/P^9+1/P^{11}+\ldots) = 0$

3 $\Longleftrightarrow$ $\mathbf{\sum_{n=-1}^{-\infty}(1/P^n) + \sum_{n=1}^{+\infty}(1/P^n) = 0}$ and this formula is **Formula 84**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty}(1/P^n) = 1/P^1+1/P^3+1/P^5+1/P^7+1/P^9+1/P^{11}+\ldots$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty}(1/P^n) = 1/P^{-1}+1/P^{-3}+1/P^{-5}+1/P^{-7}+1/P^{-9}+1/P^{-11}+\ldots$

For example if P=3 then : 3 $\Longleftrightarrow$ $\mathbf{\sum_{n=-1}^{-\infty}(1/3^n) + \sum_{n=1}^{+\infty}(1/3^n) = 0}$

** Formula 85:

We have : $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = $1/P^1 +1/P^2 +1/P^3 +1/P^4 +1/P^5 +1/P^6 +1/P^7 +1/P^8 +1/P^9 +1/P^{10}$ +....

$\sum_{n=1}^{\infty}\overline{(P)}^{n}$ =$(1/P^1 +1/P^3+1/P^5 +1/P^7+1/P^9 +...)+(1/P^2+1/P^4 +1/P^6 +1/P^8 +1/P^{10} +...)$

Let us denote this infinite series $1/P^1+1/P^3+1/P^5 +1/P^7+1/P^9 +1/P^{11}+...$ by $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)

Hence $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)= $1/P^1 +1/P^3+1/P^5 +1/P^7+1/P^9 +1/P^{11}+...$

Let us denote this infinite series $1/P^2+1/P^4 +1/P^6 +1/P^8 +1/P^{10} +1/P^{12} +...$ by $\sum_{n=2}^{\infty}\overline{(P)}^{n}$ (Even)

Hence $\sum_{n=2}^{\infty}\overline{(P)}^{n}$ (Even)= $1/P^2+1/P^4 +1/P^6 +1/P^8 +1/P^{10} +1/P^{12} +...$

We are going to multiply $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) by 1/P and we get this:

1/P. $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)= $1/P^2+ 1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} +...$

Since 1/P. $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)=$\sum_{n=2}^{\infty}\overline{(P)}^{n}$ (Even)

And since $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)+ $\sum_{n=2}^{\infty}\overline{(P)}^{n}$ (Even)

Therefore : $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)+ 1/P.$\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)

As a result : **$\sum_{n=1}^{\infty}\overline{(P)}^{n}$ = (1+ 1/P) .$\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) = ((P+ 1)/P) .$\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)**

For example: $\sum_{n=1}^{\infty}\overline{(3)}^{n}$ = (1+ 1/3) $\sum_{n=1}^{\infty}\overline{(3)}^{n}$ (odd) = (4/3) $\sum_{n=1}^{\infty}\overline{(3)}^{n}$ (odd)

And this formula is **Formula 85**

** Formula 86:

We have : $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) = $1/P^1 +1/P^3+1/P^5 +1/P^7+1/P^9 +1/P^{11}+...$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd)

we have: $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) = $1/P^1 +1/P^3+1/P^5 +1/P^7+1/P^9 +1/P^{11}+...$

$*1/P^2$ we are going to multiply $1/P^2$ by $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) and we get as a result this :

$1/P^2.\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) = $1/P^3+1/P^5 +1/P^7+1/P^9 +1/P^{11}+...$

We have: $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) – 1/P = $1/P^3+1/P^5 +1/P^7+1/P^9 +1/P^{11}+...$

Let us replace $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) – 1/P its value and we get as a result this :

$$1 = \quad 1/P^2.\sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} = \sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} - 1/P$$

$$1 \Longleftrightarrow 1/P^2.\sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} - \sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} = -1/P$$

$$1 \Longleftrightarrow (1/P^2 - 1).\sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} = -1/P$$

$$1 \Longleftrightarrow (P^2 - 1).\sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} = P$$

$1 \Longleftrightarrow \sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} = \mathbf{P/(P^2 - 1)}$ and this formula is **Formula 86**

For example : If P = 3 , then $\sum_{n=1}^{\infty}\overline{(3)}^{n}\text{(odd)} = 3/(3^2 - 1) = 3/(9 - 1) = 3/8$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) by $1/P^2$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/P^2$** by itself until the infinity, we get 0 zero as a result.

$$1/P^2 * 1/P^2 * 1/P^2 * \ldots\ldots\sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} = 0$$

$$\mathbf{1/P^2 * 1/P^2 * 1/P^2 * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

** Formula 87:

We have : $\sum_{n=1}^{\infty}\overline{(P)}^{n}\text{(odd)} = 1/P^1 + 1/P^3 + 1/P^5 + 1/P^7 + 1/P^9 + 1/P^{11} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(P)}^{n}$ (odd) by P^2 until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

$$3 = (1/P^1 + 1/P^3 + 1/P^5 + 1/P^7 + 1/P^9 + 1/P^{11} + \ldots) + (P^1 + P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots) = 0$$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} P^n + \sum_{n=1}^{+\infty} P^n = 0$ and this formula is **Formula 87**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty} P^n = P^1 + P^3 + P^5 + P^7 + P^9 + P^{11} + \ldots$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty} P^n = P^{-1} + P^{-3} + P^{-5} + P^{-7} + P^{-9} + P^{-11} + \ldots$

For example if P =3 then : $3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 3^n + \sum_{n=1}^{+\infty} 3^n = 0$

** The equality and similarity of Formula 84 and Formula 87:

$$\sum_{n=-1}^{-\infty} 1/P^{n} + \sum_{n=1}^{+\infty} 1/P^{n} = \sum_{n=-1}^{-\infty} P^{n} + \sum_{n=1}^{+\infty} P^{n} = 0$$

** Formula 88:

We have : $\sum_{n=2}^{\infty}(P)^{n}$ (Even) = $P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$

Now , let us calculate the sum of $\sum_{n=2}^{\infty}(P)^{n}$ (Even)

we have: $\sum_{n=2}^{\infty}(P)^{n}$ (Even) = $P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$

$*P^2$ we are going to multiply P^2 by $\sum_{n=2}^{\infty}(P)^{n}$ (Even) and we get as a result this :

$P^2.\sum_{n=2}^{\infty}(P)^{n}$ (Even) = $P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$

We have: $\sum_{n=2}^{\infty}(P)^{n}$ (Even) – P^2 = $P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$

Let us replace $\sum_{n=2}^{\infty}(P)^{n}$ (Even) – P^2 its value and we get as a result this :

1= $P^2.\sum_{n=2}^{\infty}(P)^{n}$ (Even) = $\sum_{n=2}^{\infty}(P)^{n}$ (Even) – P^2

1 $\Longleftrightarrow$ $P^2.\sum_{n=2}^{\infty}(P)^{n}$ (Even) - $\sum_{n=2}^{\infty}(P)^{n}$ (Even) = – P^2

1 $\Longleftrightarrow$ $(P^2 - 1).\sum_{n=2}^{\infty}(P)^{n}$ (Even) = – P^2

1 $\Longleftrightarrow$ $\sum_{n=2}^{\infty}(P)^{n}$ (Even) **= – $P^2/(P^2 - 1)$** and this formula is **Formula 88**

For example: If P = 3 , then $\sum_{n=2}^{\infty}(3)^{n}$ (Even) = $-3^2/(3^2 - 1) = -9/(9-1) = -9/8$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(P)^{n}$ (Even) by P^2 until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number P^2 by itself until the infinity, we get 0 zero as a result.

$P^2 * P^2 * P^2 * \ldots\ldots \sum_{n=2}^{\infty}(P)^{n}$ (Even) = 0

$P^2 * P^2 * P^2 * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$

** Formula 89:

We have : $\sum_{n=2}^{\infty}(P)^n$ (Even) = $P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(P)^n$ (Even) by $1/P^2$ until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

3 = $(P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots) + 1 + (1/P^2 + 1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} + \ldots) = 0$

3 $\Longleftrightarrow \sum_{n=-1}^{-\infty}(1/P^{2n}) + 1/P^0 + \sum_{n=1}^{+\infty}(1/P^{2n}) = 0$

$$\sum_{n \in Z} 1/P^{2n} = 0$$

and this formula is **Formula 89**

** Formula 90:

We have : $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) = $1/P^2 + 1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} + \ldots$

Now , let us calculate the sum of $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even)

we have: $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) = $1/P^2 + 1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} + \ldots$

$*1/P^2$ we are going to multiply $1/P^2$ by $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) and we get as a result this :

$1/P^2.\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) = $1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} + \ldots$

We have: $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) – $1/P^2$ = $1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} + \ldots$

Let us replace $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) – $1/P^2$ its value and we get as a result this :

1= $1/P^2.\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) = $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) – $1/P^2$

1 $\Longleftrightarrow 1/P^2.\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) - $\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) = – $1/P^2$

1 $\Longleftrightarrow (1/P^2 - 1).\sum_{n=2}^{\infty}\overline{(P)}^n$ (Even) = – $1/P^2$

1 $\Longleftrightarrow \sum_{n=2}^{\infty}\overline{(P)}^n$ **(Even) = $1/(P^2 - 1)$** and this formula is **Formula 90**

For example: If P = 3 , then $\sum_{n=2}^{\infty}\overline{(3)}^n$ (Even) = $1/(3^2 - 1) = 1/(9 - 1) = 1/8$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}\overline{(P)}^{n}$ (Even) by $1/P^2$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/P^2$** by itself until the infinity, we get 0 zero as a result.

$1/P^2*1/P^2*1/P^2*......\sum_{n=2}^{\infty}\overline{(P)}^{n}$ (Even) = 0

$1/P^2*1/P^2*1/P^2*$.. = 0

** Formula 91:

We have : $\sum_{n=2}^{\infty}\overline{(P)}^{n}$ (Even) = $1/P^2 + 1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(P)^{n}$ (Even) by P^2 until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

$3 = (1/P^2 + 1/P^4 + 1/P^6 + 1/P^8 + 1/P^{10} + 1/P^{12} + \ldots) + 1 + (P^2 + P^4 + P^6 + P^8 + P^{10} + P^{12} + \ldots) = 0$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} P^{2n} + P^0 + \sum_{n=1}^{+\infty} P^{2n} = 0$

$\sum_{n \in Z} P^{2n} = 0$

and this formula is **Formula 91**

** The equality and similarity of Formula 89 and Formula 91:

$$\sum_{n=-1}^{-\infty}(1/P^{2n}) + 1/P^0 + \sum_{n=1}^{+\infty}(1/P^{2n}) = \sum_{n=-1}^{-\infty} P^{2n} + P^0 + \sum_{n=1}^{+\infty} P^{2n} = 0$$

$$\sum_{n \in Z} 1/P^{2n} = \sum_{n \in Z} P^{2n} = 0$$

** Formula 92:

We have : $\sum_{\substack{n=1 \\ s/s}}^{\infty}(P)^{n} = P^s + P^{2s} + P^{3s} + P^{4s} + P^{5s} + P^{6s} + P^{7s} + P^{8s} + P^{9s} + P^{10s} + \ldots\ldots\ldots$

$\sum_{\substack{n=1 \\ s/s}}^{\infty}(P)^{n} = (P^s + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots) + (P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \ldots)$

Let us denote this infinite series $P^s + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots$ by $\sum_{\substack{n=1 \\ s/s}}^{\infty}(P)^{n}$(odd)

Hence $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) = P^{s} + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots$

Let us denote this infinite series $P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \ldots$ by $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even})$

Hence $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) = P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \ldots$

We are going to multiply $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd})$ by P^{s} and we get this:

$P^{s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) = P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \ldots$

Since $P^{s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) = \sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even})$

And since $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n} = \sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) + \sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even})$

Therefore : $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n} = \sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) + P^{s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd})$

As a result : $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n} = (1+P^{s}).\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd})$

And this formula is **Formula 92**

If P=3 , then $\sum_{\substack{n=1\\ s/s}}^{\infty}(3)^{n} = (1+3^{s}).\ \sum_{\substack{n=1\\ s/s}}^{\infty}(3)^{n}(\text{odd})$

** Formula 93:

We have : $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) = P^{s} + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots$

Now , let us calculate the sum of $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd})$

we have: $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) = P^{s} + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots$

$*P^{2s}$ we are going to multiply P^{2s} by $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd})$ and we get as a result this :

$P^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) = P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots$

We have: $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^{n}(\text{odd}) - P^{s} = P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots$

Let us replace $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) - P^s$ its value and we get as a result this :

$$1= \quad P^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) = \sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) - P^s$$

$$1 \Longleftrightarrow P^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) - \sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) = -P^s$$

$$1 \Longleftrightarrow (P^{2s}-1).\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) = -P^s$$

$$1 \Longleftrightarrow \boldsymbol{\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n\,(\text{odd}) = -P^s/(P^{2s}-1)}$$ and this formula is **Formula 93**

For example: If P = 3 , then $\sum_{\substack{n=1\\ s/s}}^{\infty}(3)^n(\text{odd}) = -3^s/(3^{2s}-1)$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n$(odd) by P^{2s} until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number P^{2s} by itself until the infinity, we get 0 zero as a result.

$$P^{2s}*P^{2s}*P^{2s}*\ldots\ldots\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) = 0$$

$$\boldsymbol{P^{2s}*P^{2s}*P^{2s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

** Formula 94:

We have : $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n(\text{odd}) = P^s + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1\\ s/s}}^{\infty}(P)^n$(odd) by $1/P^{2s}$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

$$3 = (P^s + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \ldots) + (1/P^s + 1/P^{3s} + 1/P^{5s} + 1/P^{7s} + 1/P^{9s} + 1/P^{11s} + \ldots) = 0$$

$$3 \Longleftrightarrow \boldsymbol{\sum_{n=-1}^{-\infty}(1/P^{ns}) + \sum_{n=1}^{+\infty}(1/P^{ns}) = 0}$$ and this formula is **Formula 94**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty}(1/P^{ns}) = 1/P^s + 1/P^{3s} + 1/P^{5s} + 1/P^{7s} + 1/P^{9s} + 1/P^{11s} + \ldots$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty}(1/P^{ns}) = 1/P^{-s} + 1/P^{-3s} + 1/P^{-5s} + 1/P^{-7s} + 1/P^{-9s} + 1/P^{-11s} + \ldots$

For example if P=3 then : 3 $\Longleftrightarrow$ $\sum_{n=-1}^{-\infty}(1/3^{ns}) + \sum_{n=1}^{+\infty}(1/3^{ns})$ =0

** Formula 95:

We have : $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$= $1/P^{s}$ +$1/P^{2s}$ +$1/P^{3s}$ +$1/P^{4s}$ +$1/P^{5s}$ +$1/P^{6s}$ +$1/P^{7s}$ +$1/P^{8s}$ +$1/P^{9s}$ +....

$\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$=($1/P^{s}$ +$1/P^{3s}$+$1/P^{5s}$ +$1/P^{7s}$+$1/P^{9}$ +...)+($1/P^{2s}$+$1/P^{4s}$ +$1/P^{6s}$ +$1/P^{8s}$ +...)

Let us denote this infinite series $1/P^{s}$+$1/P^{3s}$+$1/P^{5s}$ +$1/P^{7s}$+$1/P^{9s}$ +... by $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)

Hence $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)= $1/P^{s}$ +$1/P^{3s}$+$1/P^{5s}$ +$1/P^{7s}$+$1/P^{9s}$ +$1/P^{11s}$+...

Let us denote this infinite series $1/P^{2s}$+$1/P^{4s}$ +$1/P^{6s}$ +$1/P^{8s}$ +$1/P^{10s}$ +... by $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}$(Even)

Hence $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}$(Even)= $1/P^{2s}$+$1/P^{4s}$ +$1/P^{6s}$ +$1/P^{8s}$ +$1/P^{10s}$ +$1/P^{12s}$ +...

We are going to multiply $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd) by $1/P^{s}$ and we get this:

$1/P^{s}$. $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)= $1/P^{2s}$+ $1/P^{4s}$ + $1/P^{6s}$ + $1/P^{8s}$ + $1/P^{10s}$ + $1/P^{12s}$ +...

Since **$1/P^{s}$**. $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)=$\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}$(Even)

And since $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$= $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)+ $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}$(Even)

Therefore : $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$= $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)+ $1/P^{s}$.$\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)

As a result : $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$= **$(1+ 1/P^{s})$.$\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd) = $((P^{s}+ 1)/P^{s})$.$\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd)**

And this formula is **Formula 95**

For example: $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(3)}^{n}$= $(1+ 1/3^{s})$ $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(3)}^{n}$(odd) = $((3^{s} +1)/3^{s})$ $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(3)}^{n}$(odd)

** Formula 96:

We have : $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd) = $1/P^{s}$ +$1/P^{3s}$+$1/P^{5s}$ +$1/P^{7s}$+$1/P^{9s}$ +$1/P^{11s}$+...

Now , let us calculate the sum of $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd)

we have: $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = $1/P^{s} + 1/P^{3s} + 1/P^{5s} + 1/P^{7s} + 1/P^{9s} + 1/P^{11s} + \ldots$

$*1/P^{2s}$ we are going to multiply $1/P^{2s}$ by $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) and we get as a result this :

$1/P^{2s}.\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = $1/P^{3s} + 1/P^{5s} + 1/P^{7s} + 1/P^{9s} + 1/P^{11s} + \ldots$

We have: $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) – $1/P^{s}$ = $1/P^{3s} + 1/P^{5s} + 1/P^{7s} + 1/P^{9s} + 1/P^{11s} + \ldots$

Let us replace $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) – $1/P^{s}$ its value and we get as a result this :

1= $1/P^{2s}.\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) – $1/P^{s}$

1 $\Longleftrightarrow$ $1/P^{2s}.\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) - $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = – $1/P^{s}$

1 $\Longleftrightarrow$ $(1/P^{2s} - 1).\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = – $1/P^{s}$

1 $\Longleftrightarrow$ $((P^{2s} - 1)/ P^{2s}).\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = $1/P^{s}$

1 $\Longleftrightarrow$ $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$**(odd) =** $\mathbf{P^{s}/(P^{2s} - 1)}$ and this formula is **Formula 96**

For example : If P = 3 , then $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(3)}^{n}$(odd) = $3^{s}/(3^{2s} - 1)$

Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) by $1/P^{2s}$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{1/P^{2s}}$ by itself until the infinity, we get 0 zero as a result.

$1/P^{2s}*1/P^{2s}*1/P^{2s}*\ldots\ldots\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = 0

$\mathbf{1/P^{2s}*1/P^{2s}*1/P^{2s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

** Formula 97:

We have : $\underset{s/s}{\sum_{n=1}^{\infty}}\overline{(P)}^{n}$(odd) = $1/P^{s} + 1/P^{3s} + 1/P^{5s} + 1/P^{7s} + 1/P^{9s} + 1/P^{11s} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1\\ s/s}}^{\infty}\overline{(P)}^{n}$(odd) by P^{2s} until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

$$3 = (1/P^{s} + 1/P^{3s} + 1/P^{5s} + 1/P^{7s} + 1/P^{9s} + 1/P^{11s} + \dots) + (P^{s} + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \dots) = 0$$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} P^{ns} + \sum_{n=1}^{+\infty} P^{ns} = 0$ and this formula is **Formula 97**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty} P^{ns} = P^{s} + P^{3s} + P^{5s} + P^{7s} + P^{9s} + P^{11s} + \dots$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty} P^{ns} = P^{-s} + P^{-3s} + P^{-5s} + P^{-7s} + P^{-9s} + P^{-11s} + \dots$

For example if P =3 then : $3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 3^{ns} + \sum_{n=1}^{+\infty} 3^{ns} = 0$

** The equality and similarity of Formula 94 and Formula 97:

$$\sum_{n=-1}^{-\infty} 1/P^{ns} + \sum_{n=1}^{+\infty} 1/P^{ns} = \sum_{n=-1}^{-\infty} P^{ns} + \sum_{n=1}^{+\infty} P^{ns} = 0$$

** Formula 98:

We have : $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) = P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \dots$

Now , let us calculate the sum of $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even})$

we have: $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) = P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \dots$

$*P^{2s}$ we are going to multiply P^{2s} by $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even})$ and we get as a result this :

$$P^{2s}.\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) = P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \dots$$

We have: $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) - P^{2s} = P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \dots$

Let us replace $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) - P^{2s}$ its value and we get as a result this :

$$1= \quad P^{2s}.\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) = \sum_{\substack{n=2\\ s/s}}^{\infty}(P)^{n}(\text{Even}) - P^{2s}$$

$1 \Longleftrightarrow$ $P^{2s}.\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n(\text{Even}) - \sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n(\text{Even}) = -P^{2s}$

$1 \Longleftrightarrow$ $(P^{2s} - 1).\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n(\text{Even}) = -P^{2s}$

$1 \Longleftrightarrow$ $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n(\text{Even}) = -P^{2s}/(P^{2s} - 1)$ and this formula is **Formula 98**

For example: If P = 3 , then $\sum_{\substack{n=2\\ s/s}}^{\infty}(3)^n(\text{Even}) = -3^{2s}/(3^{2s} - 1)$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n$(Even) by P^{2s} until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number P^{2s} by itself until the infinity, we get 0 zero as a result.

$P^{2s}*P^{2s}*P^{2s}*\ldots\ldots\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n(\text{Even}) = 0$

$P^{2s}*P^{2s}*P^{2s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$

** Formula 99:

We have : $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n(\text{Even}) = P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + P^{12s} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2\\ s/s}}^{\infty}(P)^n$(Even) by $1/P^{2s}$ until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

$3 = (P^{2s} + P^{4s} + P^{6s} + P^{8s} + P^{10s} + \ldots) + 1 + (1/P^{2s} + 1/P^{4s} + 1/P^{6s} + 1/P^{8s} + 1/P^{10s} + \ldots) = 0$

$3 \Longleftrightarrow$ $\sum_{n=-1}^{-\infty}(1/P^{2ns}) + 1/P^0 + \sum_{n=1}^{+\infty}(1/P^{2ns}) = 0$

$\sum_{n\in Z} 1/P^{2ns} = 0$

and this formula is **Formula 99**

** Formula 100:

We have : $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^n(\text{Even}) = 1/P^{2s} + 1/P^{4s} + 1/P^{6s} + 1/P^{8s} + 1/P^{10s} + 1/P^{12s} + \ldots$

Now , let us calculate the sum of $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}$(Even)

we have: $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) = 1/P^{2s} + 1/P^{4s} + 1/P^{6s} + 1/P^{8s} + 1/P^{10s} + 1/P^{12s} + \ldots$

$*1/P^{2s}$ we are going to multiply $1/P^{2s}$ by $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}$(Even) and we get as a result this :

$$1/P^{2s}.\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) = 1/P^{4s} + 1/P^{6s} + 1/P^{8s} + 1/P^{10s} + 1/P^{12s} + \ldots$$

We have: $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) - 1/P^{2s} = 1/P^{4s} + 1/P^{6s} + 1/P^{8s} + 1/P^{10s} + 1/P^{12s} + \ldots$

Let us replace $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) - 1/P^{2s}$ its value and we get as a result this :

$$1= \quad 1/P^{2s}.\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) = \sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) - 1/P^{2s}$$

$$1 \Longleftrightarrow 1/P^{2s}.\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) - \sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) = -1/P^{2s}$$

$$1 \Longleftrightarrow (1/P^{2s} - 1).\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) = -1/P^{2s}$$

$1 \Longleftrightarrow \boldsymbol{\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n} = 1/(P^{2s} - 1)}$ and this formula is **Formula 100**

For example: If P = 3 , then $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(3)}^{n}(\text{Even}) = 1/(3^{2s} - 1)$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}$(Even) by $1/P^{2s}$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{1/P^{2s}}$ by itself until the infinity, we get 0 zero as a result.

$$1/P^{2s}*1/P^{2s}*1/P^{2s}*\ldots\ldots\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) = 0$$

$$\boldsymbol{1/P^{2s}*1/P^{2s}*1/P^{2s}*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

** Formula 101:

We have : $\sum_{\substack{n=2\\ s/s}}^{\infty}\overline{(P)}^{n}(\text{Even}) = 1/P^{2s} + 1/P^{4s} + 1/P^{6s} + 1/P^{8s} + 1/P^{10s} + 1/P^{12s} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}\overline{(P)}^n_{s/s}$(Even) by P^{2s} until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

$3 = (1/P^{2s} +1/P^{4s}+1/P^{6s} +1/P^{8s}+1/P^{10s} +\ldots) +1+ (P^{2s} +P^{4s}+P^{6s} +P^{8s}+P^{10s} +P^{12s}+\ldots) = 0$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} P^{2ns} + P^0 + \sum_{n=1}^{+\infty} P^{2ns} = 0$

$\sum_{n \in Z} P^{2ns} = 0$

and this formula is **Formula 101**

** The equality and similarity of Formula 99 and Formula 101:

$$\sum_{n=-1}^{-\infty}(1/P^{2ns}) + 1/P^0 + \sum_{n=1}^{+\infty}(1/P^{2ns}) = \sum_{n=-1}^{-\infty} P^{2ns} + P^0 + \sum_{n=1}^{+\infty} P^{2ns} = 0$$

$$\sum_{n \in Z} 1/P^{2ns} = \sum_{n \in Z} P^{2ns} = 0$$

** Formula 102:

$\prod p$ is a product of prime numbers, these prime numbers may contain the prime number 2, let $\prod p$ be the base of this following infinite series:

$\sum_{n=1}^{\infty}(\prod p)^n = \prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \prod p^8 + \prod p^9 + \prod p^{10} + \ldots$

We have : $\sum_{n=1}^{\infty}(\prod p)^n = \prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7 + \prod p^8 + \prod p^9 + \prod p^{10} + \ldots$

$\sum_{n=1}^{\infty}(\prod p)^n = (\prod p^1 + \prod p^3 + \prod p^5 + \prod p^7 + \prod p^9 + \ldots) + (\prod p^2 + \prod p^4 + \prod p^6 + \prod p^8 + \prod p^{10} + \ldots)$

Let us denote this infinite series $\prod p^1 + \prod p^3 + \prod p^5 + \prod p^7 + \prod p^9 + \ldots$ by $\sum_{n=1}^{\infty}(\prod p)^n$(odd)

Hence $\sum_{n=1}^{\infty}(\prod p)^n$(odd) $= \prod p^1 + \prod p^3 + \prod p^5 + \prod p^7 + \prod p^9 + \ldots$

Let us denote this infinite series $\prod p^2 + \prod p^4 + \prod p^6 + \prod p^8 + \prod p^{10} + \ldots$ by $\sum_{n=2}^{\infty}(\prod p)^n$(Even)

Hence $\sum_{n=2}^{\infty}(\prod p)^n$(Even)$= \prod p^2 + \prod p^4 + \prod p^6 + \prod p^8 + \prod p^{10} + \ldots$

We are going to multiply $\sum_{n=1}^{\infty}(\prod p)^n$(odd) by $\prod p$ and we get this:

$\prod p . \sum_{n=1}^{\infty}(\prod p)^n$(odd) $= \prod p^2 + \prod p^4 + \prod p^6 + \prod p^8 + \prod p^{10} + \ldots$

Since $\prod p.\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = \sum_{n=2}^{\infty}(\prod p)^n(\text{Even})$

And since $\sum_{n=1}^{\infty}(\prod p)^n = \sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) + \sum_{n=2}^{\infty}(\prod p)^n(\text{Even})$

Therefore : $\sum_{n=1}^{\infty}(\prod p)^n = \sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) + \prod p.\sum_{n=1}^{\infty}(\prod p)^n(\text{odd})$

As a result : $\boldsymbol{\sum_{n=1}^{\infty}(\prod p)^n = (1+\prod p).\sum_{n=1}^{\infty}(\prod p)^n(\text{odd})}$

And this formula is **Formula 102**

If $\prod p = 15$, then $\sum_{n=1}^{\infty}(15)^n = (1+15).\ \sum_{n=1}^{\infty}(15)^n(\text{odd}) = 16.\sum_{n=1}^{\infty}(15)^n(\text{odd})$

** Formula 103:

We have : $\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = \prod p^1 + \prod p^3 + \prod p^5 + \prod p^7 + \prod p^9 + \ldots$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(\prod p)^n(\text{odd})$

we have: $\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = \prod p^1 + \prod p^3 + \prod p^5 + \prod p^7 + \prod p^9 + \ldots$

$*\prod p^2$ we are going to multiply $\prod p^2$ by $\sum_{n=1}^{\infty}(\prod p)^n(\text{odd})$ and we get as a result this :

$\prod p^2.\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = \prod p^3 + \prod p^5 + \prod p^7 + \prod p^9 + \ldots$

We have: $\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) - \prod p^1 = \prod p^3 + \prod p^5 + \prod p^7 + \prod p^9 + \ldots$

Let us replace $\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) - \prod p^1$ its value and we get as a result this :

$1 = \quad \prod p^2.\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = \sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) - \prod p$

$1 \Longleftrightarrow \prod p^2.\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) - \sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = -\prod p$

$2 \Longleftrightarrow (\prod p^2 - 1).\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = -\prod p$

$1 \Longleftrightarrow \boldsymbol{\sum_{n=1}^{\infty}(\prod p)^n(\text{odd}) = -\prod p / (\prod p^2 - 1)}$ and this formula is **Formula 103**

For example: If $\prod p = 15$, then $\sum_{n=1}^{\infty}(15)^n(\text{odd}) = -15/(15^2 - 1) = -15/(225 - 1) = -15/224$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(\prod p)^n(\text{odd})$ by $\prod p^2$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\prod p^2$ by itself until the infinity, we get 0 zero as a result.

$\prod p^{2} * \prod p^{2} * \prod p^{2} * ......\sum_{n=1}^{\infty}(\prod p)^{n}(odd) = 0$

$\prod p^{2} * \prod p^{2} * \prod p^{2} *$ .... = 0

** Formula 104:

We have : $\sum_{n=1}^{\infty}(\prod p)^{n}(odd) = \prod p^{1} + \prod p^{3} + \prod p^{5} + \prod p^{7} + \prod p^{9} + ...$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(\prod p)^{n}(odd)$ by $1/\prod p^{2}$ until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

$3 = (\prod p^{1} + \prod p^{3} + \prod p^{5} + \prod p^{7} + ...) + (1/\prod p^{1} + 1/\prod p^{3} + 1/\prod p^{5} + 1/\prod p^{7} + ...) = 0$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty}(1/\prod p^{n}) + \sum_{n=1}^{+\infty}(1/\prod p^{n}) = 0$ and this formula is **Formula 104**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty}(1/\prod p^{n}) = 1/\prod p^{1} + 1/\prod p^{3} + 1/\prod p^{5} + 1/\prod p^{7} + ...$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty}(1/\prod p^{n}) = 1/\prod p^{-1} + 1/\prod p^{-3} + 1/\prod p^{-5} + 1/\prod p^{-7} + ...$

For example if $\prod p = 15$ then : $3 \Longleftrightarrow \sum_{n=-1}^{-\infty}(1/15^{n}) + \sum_{n=1}^{+\infty}(1/15^{n}) = 0$

** Formula 105:

We have : $\sum_{n=1}^{\infty}(\overline{\prod p})^{n} = 1/\prod p^{1} + 1/\prod p^{2} + 1/\prod p^{3} + 1/\prod p^{4} + 1/\prod p^{5} + 1/\prod p^{6} + 1/\prod p^{7} + 1/\prod p^{8} + ...$

$\sum_{n=1}^{\infty}(\overline{\prod p})^{n} = (1/\prod p^{1} + 1/\prod p^{3} + 1/\prod p^{5} + 1/\prod p^{7} + ...) + (1/\prod p^{2} + 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + ...)$

Let us denote this infinite series $1/\prod p^{1} + 1/\prod p^{3} + 1/\prod p^{5} + 1/\prod p^{7} + ...$ by $\sum_{n=1}^{\infty}(\overline{\prod p})^{n}(odd)$

Hence $\sum_{n=1}^{\infty}(\overline{\prod p})^{n}(odd) = 1/\prod p^{1} + 1/\prod p^{3} + 1/\prod p^{5} + 1/\prod p^{7} + ...$

Let us denote this infinite series $1/\prod p^{2} + 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + ...$ by $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even)$

Hence $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = 1/\prod p^{2} + 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + ...$

We are going to multiply $\sum_{n=1}^{\infty}(\overline{\prod p})^{n}(odd)$ by $1/\prod p$ and we get this:

$1/\prod p . \sum_{n=1}^{\infty}(\overline{\prod p})^{n}(odd) = 1/\prod p^{2} + 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + ...$

Since $1/\prod p . \sum_{n=1}^{\infty}(\overline{\prod p})^{n}(odd) = \sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even)$

And since $\sum_{n=1}^{\infty}(\overline{\prod p})^{n} = \sum_{n=1}^{\infty}(\overline{\prod p})^{n}(odd) + \sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even)$

Therefore : $\sum_{n=1}^{\infty}(\overline{\prod p})^n = \sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) + 1/\prod p.\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd})$

As a result : $\mathbf{\sum_{n=1}^{\infty}(\overline{\prod p})^n = (1+ 1/\prod p) .\sum_{n=1}^{\infty}(\overline{\prod p})^n(odd) = ((\prod p + 1)/ \prod p) .\sum_{n=1}^{\infty}(\overline{\prod p})^n(odd)}$

For example: $\sum_{n=1}^{\infty}(\overline{15})^n = (1+ 1/15) \sum_{n=1}^{\infty}(\overline{15})^n (\text{odd}) = (16/15) \sum_{n=1}^{\infty}(\overline{15})^n (\text{odd})$

And this formula is **Formula 105**

** Formula 106:

We have : $\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = 1/\prod p^1 +1/\prod p^3+1/\prod p^5 +1/\prod p^7+1/\prod p^9 +1/\prod p^{11} +\dots$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd})$

we have: $\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = 1/\prod p^1 +1/\prod p^3+1/\prod p^5 +1/\prod p^7+1/\prod p^9 +1/\prod p^{11} +\dots$

***1/∏p²** we are going to multiply $1/\prod p^2$ by $\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd})$ and we get as a result this :

$1/\prod p^2.\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = 1/\prod p^3+1/\prod p^5 +1/\prod p^7+1/\prod p^9 +1/\prod p^{11} +\dots$

We have: $\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) - 1/\prod p = 1/\prod p^3+1/\prod p^5 +1/\prod p^7+1/\prod p^9 +1/\prod p^{11} +\dots$

Let us replace $\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) - 1/\prod p$ its value and we get as a result this :

$$1= \quad 1/\prod p^2.\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = \sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) - 1/\prod p$$

$$1 \Longleftrightarrow 1/\prod p^2.\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) - \sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = - 1/\prod p$$

$$1 \Longleftrightarrow (1/\prod p^2 - 1).\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = - 1/\prod p$$

$$1 \Longleftrightarrow (\prod p^2 - 1).\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = \prod p$$

$1 \Longleftrightarrow \mathbf{\sum_{n=1}^{\infty}(\overline{\prod p})^n(odd) = \prod p /(\prod p^2 - 1)}$ and this formula is **Formula 106**

For example : If $\prod p = 15$, then $\sum_{n=1}^{\infty}(\overline{15})^n (\text{odd}) = 15/(15^2 - 1) = 15/(225 -1)= 15/224$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(\overline{\prod p})^n(odd)$ by $1/\prod p^2$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{1/\prod p^2}$ by itself until the infinity, we get 0 zero as a result.

$1/\prod p^2*1/\prod p^2*1/\prod p^2*\dots\dots\sum_{n=1}^{\infty}(\overline{\prod p})^n(\text{odd}) = 0$

$\mathbf{1/\prod p^2*1/\prod p^2*1/\prod p^2*}$**………………………………………… = 0**

** Formula 107:

We have : $\sum_{n=1}^{\infty}(\overline{\prod p})^{n}(\text{odd}) = 1/\prod p^{1} + 1/\prod p^{3} + 1/\prod p^{5} + 1/\prod p^{7} + 1/\prod p^{9} + 1/\prod p^{11} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(\overline{\prod p})^{n}(\text{odd})$ by $\prod p^{2}$ until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

$$3 = \quad (1/\prod p^{1} + 1/\prod p^{3} + 1/\prod p^{5} + 1/\prod p^{7} + \ldots) + (\prod p^{1} + \prod p^{3} + \prod p^{5} + \prod p^{7} + \ldots) = 0$$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} \prod p^{n} + \sum_{n=1}^{+\infty} \prod p^{n} = 0$ and this formula is **Formula 107**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty} \prod p^{n} = \prod p^{1} + \prod p^{3} + \prod p^{5} + \prod p^{7} + \prod p^{9} + \prod p^{11} + \ldots$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty} \prod p^{n} = \prod p^{-1} + \prod p^{-3} + \prod p^{-5} + \prod p^{-7} + \prod p^{-9} + \prod p^{-11} + \ldots$

For example if $\prod p = 15$ then : $3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 15^{n} + \sum_{n=1}^{+\infty} 15^{n} = 0$

** The equality and similarity of Formula 104 and Formula 107:

$$\sum_{n=-1}^{-\infty} 1/\prod p^{n} + \sum_{n=1}^{+\infty} 1/\prod p^{n} = \sum_{n=-1}^{-\infty} \prod p^{n} + \sum_{n=1}^{+\infty} \prod p^{n} = 0$$

** Formula 108 :

We have : $\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even}) = \prod p^{2} + \prod p^{4} + \prod p^{6} + \prod p^{8} + \prod p^{10} + \prod p^{12} + \ldots$

Now , let us calculate the sum of $\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even})$

we have: $\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even}) = \prod p^{2} + \prod p^{4} + \prod p^{6} + \prod p^{8} + \prod p^{10} + \prod p^{12} + \ldots$

$*\prod p^{2}$ we are going to multiply $\prod p^{2}$ by $\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even})$ and we get as a result this :

$\prod p^{2}.\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even}) = \prod p^{4} + \prod p^{6} + \prod p^{8} + \prod p^{10} + \prod p^{12} + \ldots$

We have: $\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even}) - \prod p^{2} = \prod p^{4} + \prod p^{6} + \prod p^{8} + \prod p^{10} + \prod p^{12} + \ldots$

Let us replace $\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even}) - \prod p^{2}$ its value and we get as a result this :

$$1 = \quad \prod p^{2}.\sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even}) = \sum_{n=2}^{\infty}(\prod p)^{n}(\text{Even}) - \prod p^{2}$$

$1 \Longleftrightarrow$ $\prod p^2.\sum_{n=2}^{\infty}(\prod p)^n(\text{Even})$ - $\sum_{n=2}^{\infty}(\prod p)^n(\text{Even}) = -\prod p^2$

$1 \Longleftrightarrow$ $(\prod p^2 - 1).\sum_{n=2}^{\infty}(\prod p)^n(\text{Even}) = -\prod p^2$

$1 \Longleftrightarrow$ $\boldsymbol{\sum_{n=2}^{\infty}(\prod p)^n(\text{Even}) = -\prod p^2/(\prod p^2 - 1)}$ and this formula is **Formula 108**

For example: If $\prod p = 15$, then $\sum_{n=2}^{\infty}(15)^n (\text{Even}) = -15^2/(15^2 - 1) = -225/224$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(\prod p)^n(\text{Even})$ by $\prod p^2$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number **$\prod p^2$** by itself until the infinity, we get 0 zero as a result.

$\prod p^2 * \prod p^2 * \prod p^2 * \ldots\ldots \sum_{n=2}^{\infty}(\prod p)^n(\text{Even}) = 0$

$\boldsymbol{\prod p^2 * \prod p^2 * \prod p^2 * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$

** Formula 109 :

We have : $\sum_{n=2}^{\infty}(\prod p)^n(\text{Even}) = \prod p^2 + \prod p^4 + \prod p^6 + \prod p^8 + \prod p^{10} + \prod p^{12} + \ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(\prod p)^n(\text{Even})$ by $1/\prod p^2$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

$3 = (\prod p^2 + \prod p^4 + \prod p^6 + \prod p^8 + \prod p^{10} \ldots) + 1 + (1/\prod p^2 + 1/\prod p^4 + 1/\prod p^6 + 1/\prod p^8 + 1/\prod p^{10} + \ldots) = 0$

$3 \Longleftrightarrow$ $\boldsymbol{\sum_{n=-1}^{-\infty}(1/\prod p^{2n}) + 1/\prod p^0 + \sum_{n=1}^{+\infty}(1/\prod p^{2n}) = 0}$

$\boldsymbol{\sum_{n \in Z} 1/\prod p^{2n} = 0}$

and this formula is **Formula 109**

For example if $\prod p = 15$ then : $3 \Longleftrightarrow$ $\boldsymbol{\sum_{n=-1}^{-\infty} 1/15^{2n} + 1/15^0 + \sum_{n=1}^{+\infty} 1/15^{2n} = 0}$

$\boldsymbol{\sum_{n \in Z} 1/15^{2n} = 0}$

** Formula 110 :

We have : $\sum_{n=2}^{\infty}(\overline{\prod p})^n(\text{Even}) = 1/\prod p^2 + 1/\prod p^4 + 1/\prod p^6 + 1/\prod p^8 + 1/\prod p^{10} + 1/\prod p^{12} \ldots$

Now , let us calculate the sum of $\sum_{n=2}^{\infty}(\overline{\prod p})^n(\text{Even})$

we have: $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = 1/\prod p^{2} + 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + 1/\prod p^{10} + 1/\prod p^{12}...$

***1/∏p²** we are going to multiply $1/\prod p^{2}$ by $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even)$ and we get as a result this :

$$1/\prod p^{2}.\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + 1/\prod p^{10} + 1/\prod p^{12}...$$

We have: $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) - 1/\prod p^{2} = 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + 1/\prod p^{10} + 1/\prod p^{12}...$

Let us replace $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) - 1/\prod p^{2}$ its value and we get as a result this :

$$1 = \quad 1/\prod p^{2}.\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = \sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) - 1/\prod p^{2}$$

$$1 \Longleftrightarrow 1/\prod p^{2}.\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) - \sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = -1/\prod p^{2}$$

$$2 \Longleftrightarrow (1/\prod p^{2} - 1).\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = -1/\prod p^{2}$$

$1 \Longleftrightarrow \sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = 1/(\prod p^{2} - 1)$ and this formula is **Formula 110**

For example: If $\prod p = 15$, then $\sum_{n=2}^{\infty}(\overline{15})^{n}(Even) = 1/(15^{2} - 1) = 1/(225 - 1) = 1/224$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even)$ by $1/\prod p^{2}$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/\prod p^{2}$** by itself until the infinity, we get 0 zero as a result.

$$1/\prod p^{2} * 1/\prod p^{2} * 1/\prod p^{2} * ......\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = 0$$

$$1/\prod p^{2} * 1/\prod p^{2} * 1/\prod p^{2} * .... = 0$$

** Formula 111:

We have : $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even) = 1/\prod p^{2} + 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + 1/\prod p^{10} + 1/\prod p^{12}...$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(\overline{\prod p})^{n}(Even)$ by $\prod p^{2}$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

$$3 = (1/\prod p^{2} + 1/\prod p^{4} + 1/\prod p^{6} + 1/\prod p^{8} + 1/\prod p^{10}...) + 1 + (\prod p^{2} + \prod p^{4} + \prod p^{6} + \prod p^{8} + \prod p^{10} + ...) = 0$$

$$3 \Longleftrightarrow \sum_{n=-1}^{-\infty}\prod p^{2n} + \prod p^{0} + \sum_{n=1}^{+\infty}\prod p^{2n} = 0 \qquad , \quad \sum_{n \in Z}\prod p^{2n} = 0$$

and this formula is **Formula 111**

For example if $\prod p = 15$ then : 3 $\Longleftrightarrow$ $\sum_{n=-1}^{-\infty} 15^{2n} + 15^0 + \sum_{n=1}^{+\infty} 15^{2n} = 0$

$\sum_{n \in Z} 15^{2n} = 0$

** The equality and similarity of Formula 109 and Formula 111 :

$\sum_{n=-1}^{-\infty}(1/\prod p^{2n}) + 1/\prod p^{0} + \sum_{n=1}^{+\infty}(1/\prod p^{2n}) = \sum_{n=-1}^{-\infty} \prod p^{2n} + \prod p^{0} + \sum_{n=1}^{+\infty} \prod p^{2n} = 0$

$\sum_{n \in Z} 1/\prod p^{2n} = \sum_{n \in Z} \prod p^{2n} = 0$

** Formula 112:

We have : $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n} = \prod p^{s} + \prod p^{2s} + \prod p^{3s} + \prod p^{4s} + \prod p^{5s} + \prod p^{6s} + \prod p^{7s} + \prod p^{8s} + \prod p^{9s} + \ldots$

$\sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n} = (\prod p^{s} + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots) + (\prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \ldots)$

Let us denote this infinite series $\prod p^{s} + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$ by $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd)

Hence $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd) $= \prod p^{s} + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$

Let us denote this infinite series $\prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \ldots$ by $\sum_{\substack{n=2 \\ s/s}}^{\infty}(\prod p)^{n}$ (Even)

Hence $\sum_{\substack{n=2 \\ s/s}}^{\infty}(P)^{n}$(Even) $= \prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \ldots$

We are going to multiply $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd) by $\prod p^{s}$ and we get this:

$\boldsymbol{\prod p^{s}} . \sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd)$= \prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \ldots$

Since $\boldsymbol{\prod p^{s}} . \sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd) $= \sum_{\substack{n=2 \\ s/s}}^{\infty}(\prod p)^{n}$ (Even)

And since $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n} = \sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd) $+ \sum_{\substack{n=2 \\ s/s}}^{\infty}(\prod p)^{n}$ (Even)

Therefore : $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n} = \sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd)$+ \prod p^{s} . \sum_{\substack{n=1 \\ s/s}}^{\infty}(\prod p)^{n}$ (odd)

As a result : $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n = (1+\prod p^s).\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n(\text{odd})$

And this formula is **Formula 112**

If $\prod p = 15$, then $\sum_{\substack{n=1\\ s/s}}^{\infty}(15)^n=(1+15^s).\ \sum_{\substack{n=1\\ s/s}}^{\infty}(15)^n(\text{odd})$

** Formula 113 :

We have : $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) = \prod p^s + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$

Now , let us calculate the sum of $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd})$

we have: $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) = \prod p^s + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$

*$\prod p^{2s}$ we are going to multiply $\prod p^{2s}$ by $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd})$ and we get as a result this :

$$\prod p^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) = \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$$

We have: $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) - \prod p^s = \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$

Let us replace $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) - \prod p^s$ its value and we get as a result this :

$$1= \quad \prod p^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) = \sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) - \prod p^s$$

$$1 \Longleftrightarrow \prod p^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) - \sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) = -\prod p^s$$

$$2 \Longleftrightarrow (\prod p^{2s} - 1).\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) = -\prod p^s$$

$1 \Longleftrightarrow \sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd}) = -\prod p^s/(\prod p^{2s} - 1)$ and this formula is **Formula 113**

For example: If $\prod p = 15$, then $\sum_{\substack{n=1\\ s/s}}^{\infty}(15)^n(\text{odd}) = -15^s/(15^{2s} - 1)$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1\\ s/s}}^{\infty}(\prod p)^n\,(\text{odd})$ by $\prod p^{2s}$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number $\prod p^{2s}$ by itself until the infinity, we get 0 zero as a result.

$$\prod p^{2s} * \prod p^{2s} * \prod p^{2s} * \ldots\ldots \sum_{\substack{n=1 \\ s/s}}^{\infty} (\prod p)^{n}\,(\text{odd}) = 0$$

$$\prod p^{2s} * \prod p^{2s} * \prod p^{2s} * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$$

** Formula 114 :

We have : $\sum_{\substack{n=1 \\ s/s}}^{\infty} (\prod p)^{n}\,(\text{odd}) = \prod p^{s} + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1 \\ s/s}}^{\infty} (\prod p)^{n}$ (odd) by $1/\prod p^{2s}$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

$$3 = (\prod p^{s} + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \ldots) + (1/\prod p^{s} + 1/\prod p^{3s} + 1/\prod p^{5s} + 1/\prod p^{7s} + \ldots) = 0$$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} (1/\prod p^{ns}) + \sum_{n=1}^{+\infty} (1/\prod p^{ns}) = 0$ and this formula is **Formula 114**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty} (1/\prod p^{ns}) = 1/\prod p^{s} + 1/\prod p^{3s} + 1/\prod p^{5s} + 1/\prod p^{7s} + \ldots$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty} (1/\prod p^{ns}) = 1/\prod p^{-s} + 1/\prod p^{-3s} + 1/\prod p^{-5s} + 1/\prod p^{-7s} + \ldots$

For example if $\prod p = 15$ then : $3 \Longleftrightarrow \sum_{n=-1}^{-\infty} (1/15^{ns}) + \sum_{n=1}^{+\infty} (1/15^{ns}) = 0$

** Formula 115 :

We have : $\sum_{\substack{n=1 \\ s/s}}^{\infty} (\overline{\prod p})^{n} = 1/\prod p^{s} + 1/\prod p^{2s} + 1/\prod p^{3s} + 1/\prod p^{4s} + 1/\prod p^{5s} + 1/\prod p^{6s} + 1/\prod p^{7s} + \ldots.$

$$\sum_{\substack{n=1 \\ s/s}}^{\infty} (\overline{\prod p})^{n} = (1/\prod p^{s} + 1/\prod p^{3s} + 1/\prod p^{5s} + 1/\prod p^{7s} + \ldots) + (1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + \ldots)$$

Let us denote this infinite series $1/\prod p^{s} + 1/\prod p^{3s} + 1/\prod p^{5s} + 1/\prod p^{7s} + \ldots$ by $\sum_{\substack{n=1 \\ s/s}}^{\infty} (\overline{\prod p})^{n}$ (odd)

Hence $\sum_{\substack{n=1 \\ s/s}}^{\infty} (\overline{\prod p})^{n}$ (odd)$= 1/\prod p^{s} + 1/\prod p^{3s} + 1/\prod p^{5s} + 1/\prod p^{7s} + \ldots$

Let us denote this infinite series $1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + \ldots$ by $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^{n}$ (Even)

Hence $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^{n}$ (Even)$= 1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + \ldots$

We are going to multiply $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) by $1/\prod \mathrm{p}^{s}$ and we get this:

$\mathbf{1/\prod p^{s}}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd)$= 1/\prod \mathrm{p}^{2s}+ 1/\prod \mathrm{p}^{4s} + 1/\prod \mathrm{p}^{6s} + 1/\prod \mathrm{p}^{8s} + 1/\prod \mathrm{p}^{10s} + 1/\prod \mathrm{p}^{12s} +\ldots$

Since $\mathbf{1/\prod p^{s}}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd)$=\sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (Even)

And since $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n} = \sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd)$+ \sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (Even)

Therefore : $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n} = \sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd)$+ 1/\prod \mathrm{p}^{s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd)

As a result : $\boldsymbol{\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod p})^{n}= (1+ 1/\prod p^{s}) .\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod p})^{n}(\mathrm{odd}) = ((\prod p^{s}+ 1)/ \prod p^{s}) .\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod p})^{n}(\mathrm{odd})}$

And this formula is **Formula 115**

For example: $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{15})^{n}= (1+ 1/15^{s}) \sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{15})^{n}(\mathrm{odd}) = ((15^{s} +1)/15^{s}) \sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{15})^{n}(\mathrm{odd})$

** Formula 116 :

We have : $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $= 1/\prod \mathrm{p}^{s} +1/\prod \mathrm{p}^{3s}+1/\prod \mathrm{p}^{5s} +1/\prod \mathrm{p}^{7s} +\ldots$

Now , let us calculate the sum of $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd)

we have: $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $= 1/\prod \mathrm{p}^{s} +1/\prod \mathrm{p}^{3s}+1/\prod \mathrm{p}^{5s} +1/\prod \mathrm{p}^{7s} +\ldots$

$*1/\prod p^{2s}$ we are going to multiply $1/\prod \mathrm{p}^{2s}$ by $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) and we get as a result this :

$1/\prod \mathrm{p}^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $= 1/\prod \mathrm{p}^{3s}+1/\prod \mathrm{p}^{5s} +1/\prod \mathrm{p}^{7s} +\ldots$

We have: $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $- 1/\prod \mathrm{p}^{s} = 1/\prod \mathrm{p}^{3s}+1/\prod \mathrm{p}^{5s} +1/\prod \mathrm{p}^{7s} +\ldots$

Let us replace $\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $- 1/\prod \mathrm{p}^{s}$ its value and we get as a result this :

1= $1/\prod \mathrm{p}^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $= \sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $- 1/\prod \mathrm{p}^{s}$

1 $\Longleftrightarrow 1/\prod \mathrm{p}^{2s}.\sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $- \sum_{\substack{n=1\\ s/s}}^{\infty}(\overline{\prod \mathrm{p}})^{n}$ (odd) $= - 1/\prod \mathrm{p}^{s}$

$1 \Longleftrightarrow (1/\prod p^{2s} - 1).\sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{\prod p})^{n}\text{(odd)} = -1/\prod p^{s}$

$1 \Longleftrightarrow ((\prod p^{2s} - 1)/\prod p^{2s}).\sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{\prod p})^{n}\text{(odd)} = 1/\prod p^{s}$

$1 \Longleftrightarrow \sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{\prod p})^{n}\text{(odd)} = \prod p^{s}/(\prod p^{2s} - 1)$ and this formula is **Formula 116**

For example : If $\prod p = 15$, then $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{15})^{n}\text{(odd)} = 15^{s}/(15^{2s} - 1)$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{\prod p})^{n}$(odd) by $1/\prod p^{2s}$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/\prod p^{2s}$** by itself until the infinity, we get 0 zero as a result.

$1/\prod p^{2s} * 1/\prod p^{2s} * 1/\prod p^{2s} * \ldots\ldots \sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{\prod p})^{n}\text{(odd)} = 0$

$1/\prod p^{2s} * 1/\prod p^{2s} * 1/\prod p^{2s} * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$

** Formula 117 :

We have : $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{\prod p})^{n}\text{(odd)} = 1/\prod p^{s} + 1/\prod p^{3s} + 1/\prod p^{5s} + 1/\prod p^{7s} + \ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=1 \\ s/s}}^{\infty}(\overline{\prod p})^{n}$(odd) by $\prod p^{2s}$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

$3 = (1/\prod p^{s} + 1/\prod p^{3s} + 1/\prod p^{5s} + 1/\prod p^{7s} + 1/\prod p^{7s} + \ldots) + (\prod p^{s} + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots) = 0$

$3 \Longleftrightarrow \sum_{n=-1}^{-\infty} \prod p^{ns} + \sum_{n=1}^{+\infty} \prod p^{ns} = 0$ and this formula is **Formula 117**

Hence n = 2k+1 and k ≥ 0 and k ∈ N , $\sum_{n=1}^{+\infty} \prod p^{ns} = \prod p^{s} + \prod p^{3s} + \prod p^{5s} + \prod p^{7s} + \prod p^{9s} + \ldots$

Hence n = 2k+1 and k ≤ -1 and k ∈ Z , $\sum_{n=-1}^{-\infty} \prod p^{ns} = \prod p^{-s} + \prod p^{-3s} + \prod p^{-5s} + \prod p^{-7s} + \prod p^{-9s} + \ldots$

For example if $\prod p = 15$ then : $3 \Longleftrightarrow \sum_{n=-1}^{-\infty} 15^{ns} + \sum_{n=1}^{+\infty} 15^{ns} = 0$

** The equality and similarity of Formula 114 and Formula 117:

$$\sum_{n=-1}^{-\infty} 1/\prod p^{ns} + \sum_{n=1}^{+\infty} 1/\prod p^{ns} = \sum_{n=-1}^{-\infty} \prod p^{ns} + \sum_{n=1}^{+\infty} \prod p^{ns} = 0$$

** Formula 118 :

We have : $\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n$ (Even) = $\prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \prod p^{12s} + \ldots$

Now , let us calculate the sum of $\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n$ (Even)

we have: $\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n$ (Even) = $\prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \prod p^{12s} + \ldots$

$*\prod p^{2s}$ we are going to multiply $\prod p^{2s}$ by $\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n$ (Even) and we get as a result this :

$$\prod p^{2s}.\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n \text{ (Even)} = \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \prod p^{12s} + \ldots$$

We have: $\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n$ (Even) $- \prod p^{2s} = \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \prod p^{12s} + \ldots$

Let us replace $\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n$ (Even) $- \prod p^{2s}$ its value and we get as a result this :

$$1= \quad \prod p^{2s}.\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n \text{ (Even)} = \underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n \text{ (Even)} - \prod p^{2s}$$

$$1 \Longleftrightarrow \prod p^{2s}.\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n \text{ (Even)} - \underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n \text{ (Even)} = -\prod p^{2s}$$

$$1 \Longleftrightarrow (\prod p^{2s} - 1).\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n \text{ (Even)} = -\prod p^{2s}$$

$1 \Longleftrightarrow \underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n\text{(Even)} = -\prod p^{2s}/(\prod p^{2s} - 1)$ and this formula is

Formula 118

For example: If $\prod p = 15$, then $\underset{s/s}{\sum_{n=2}^{\infty}}(15)^n$(Even) = $-15^{2s}/(15^{2s} - 1)$

<u>Question: what will be the result if we repeat multiplying this infinite series $\underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n$ (Even) by $\prod p^{2s}$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number **$\prod p^{2s}$** by itself until the infinity, we get 0 zero as a result.

$$\prod p^{2s} * \prod p^{2s} * \prod p^{2s} * \ldots\ldots \underset{s/s}{\sum_{n=2}^{\infty}}(\prod p)^n \text{ (Even)} = 0$$

$\prod p^{2s} * \prod p^{2s} * \prod p^{2s} *$…………………………………… = 0

** Formula 119 :

We have : $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\prod p)^n$ (Even) = $\prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \prod p^{10s} + \prod p^{12s} + \ldots$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\prod p)^n$ (Even) by $1/\prod p^{2s}$ until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

3 = $(\prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \ldots) + 1 + (1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + \ldots) = 0$

3 $\Longleftrightarrow \sum_{n=-1}^{-\infty} (1/\prod p^{2ns}) + 1/\prod p^{0} + \sum_{n=1}^{+\infty} (1/\prod p^{2ns}) = 0$

$\sum_{n \in Z} 1/\prod p^{2ns} = 0$

and this formula is **Formula 119**

** Formula 120:

We have : $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) = $1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + 1/\prod p^{10s} + 1/\prod p^{12s} + \ldots$

Now , let us calculate the sum of $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even)

we have: $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) = $1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + 1/\prod p^{10s} + 1/\prod p^{12s} + \ldots$

$*1/\prod p^{2s}$ we are going to multiply $1/\prod p^{2s}$ by $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) and we get as a result this :

$1/\prod p^{2s} . \sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) = $1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + 1/\prod p^{10s} + 1/\prod p^{12s} + \ldots$

We have: $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) – $1/\prod p^{2s}$ = $1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + 1/\prod p^{10s} + 1/\prod p^{12s} + \ldots$

Let us replace $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) – $1/\prod p^{2s}$ its value and we get as a result this :

1= $1/\prod p^{2s} . \sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) = $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) – $1/\prod p^{2s}$

1 $\Longleftrightarrow$ $1/\prod p^{2s} . \sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) - $\sum_{\substack{n=2 \\ s/s}}^{\infty} (\overline{\prod p})^n$ (Even) = – $1/\prod p^{2s}$

$1 \iff (1/\prod p^{2s} - 1).\sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod p})^{n}$ (Even) = $-1/\prod p^{2s}$

$1 \iff \sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod p})^{n}$ = $1/(\prod p^{2s} - 1)$ and this formula is **Formula 120**

For example: If $\prod p = 15$, then $\sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{15})^{n}$(Even) = $1/(15^{2s} - 1)$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod p})^{n}$ (Even) by $1/\prod p^{2s}$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/\prod p^{2s}$** by itself until the infinity, we get 0 zero as a result.

$1/\prod p^{2s} * 1/\prod p^{2s} * 1/\prod p^{2s} * \ldots\ldots \sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod p})^{n}$ (Even) = 0

$1/\prod p^{2s} * 1/\prod p^{2s} * 1/\prod p^{2s} * \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0$

** Formula 121 :

We have : $\sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod p})^{n}$ (Even) = $1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + 1/\prod p^{10s} + 1/\prod p^{12s} + \ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{\substack{n=2\\ s/s}}^{\infty}(\overline{\prod p})^{n}$ (Even) by $\prod p^{2s}$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

$3 = (1/\prod p^{2s} + 1/\prod p^{4s} + 1/\prod p^{6s} + 1/\prod p^{8s} + \ldots) + 1 + (\prod p^{2s} + \prod p^{4s} + \prod p^{6s} + \prod p^{8s} + \ldots) = 0$

$3 \iff \sum_{n=-1}^{-\infty} \prod p^{2ns} + \prod p^{0} + \sum_{n=1}^{+\infty} \prod p^{2ns} = 0$

$\sum_{n \in Z} \prod p^{2ns} = 0$

and this formula is **Formula 121**

** The equality and similarity of Formula 119 and Formula 121:

$\sum_{n=-1}^{-\infty}(1/\prod p^{2ns}) + 1/\prod p^{0} + \sum_{n=1}^{+\infty}(1/\prod p^{2ns}) = \sum_{n=-1}^{-\infty} \prod p^{2ns} + \prod p^{0} + \sum_{n=1}^{+\infty} \prod p^{2ns} = 0$

$\sum_{n \in Z} 1/\prod p^{2ns} = \sum_{n \in Z} \prod p^{2ns} = 0$

** Formula 122:

We have : $\sum_{n=1}^{\infty}(i)^n = i^1 + i^2 + i^3 + i^4 + i^5 + i^6 + i^7 + i^8 + i^9 + i^{10} + \ldots\ldots\ldots$

$\sum_{n=1}^{\infty}(i)^n = (i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots) + (i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + \ldots)$

Let us denote this infinite series $i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots$ by $\sum_{n=1}^{\infty}(i)^n$ (odd)

Hence $\sum_{n=1}^{\infty}(i)^n$ (odd)$= i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots$

Let us denote this infinite series $i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + \ldots$ by $\sum_{n=2}^{\infty}(i)^n$ (Even)

Hence $\sum_{n=2}^{\infty}(i)^n$ (Even)$= i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + \ldots$

We are going to multiply $\sum_{n=1}^{\infty}(i)^n$ (odd)by P and we get this:

i. $\sum_{n=1}^{\infty}(i)^n$ (odd)$= i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + \ldots$

Since i. $\sum_{n=1}^{\infty}(i)^n$ (odd)$=\sum_{n=2}^{\infty}(i)^n$ (Even)

And since $\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n$ (odd)$+ \sum_{n=2}^{\infty}(i)^n$ (Even)

Therefore : $\sum_{n=1}^{\infty}(i)^n = \sum_{n=1}^{\infty}(i)^n$ (odd)+ i.$\sum_{n=1}^{\infty}(i)^n$ (odd)

As a result : $\boldsymbol{\sum_{n=1}^{\infty}(i)^n = (1+i).\sum_{n=1}^{\infty}(i)^n}$ **(odd)**

And this formula is **Formula 122**

** Formula 123:

We have : $\sum_{n=1}^{\infty}(i)^n$ (odd) $= i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}(i)^n$ (odd)

we have: $\sum_{n=1}^{\infty}(i)^n$ (odd) $= i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots$

$*i^2$ we are going to multiply i^2 by $\sum_{n=1}^{\infty}(i)^n$ (odd) and we get as a result this :

$i^2.\sum_{n=1}^{\infty}(i)^n$ (odd) $= i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots$

We have: $\sum_{n=1}^{\infty}(i)^n$ (odd) $- i^1 = i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots$

Let us replace $\sum_{n=1}^{\infty}(i)^n$ (odd) $- i^1$ its value and we get as a result this :

1= $i^2.\sum_{n=1}^{\infty}(i)^n$ (odd) = $\sum_{n=1}^{\infty}(i)^n$ (odd) – i

1 $\Longleftrightarrow$ $i^2.\sum_{n=1}^{\infty}(i)^n$ (odd) - $\sum_{n=1}^{\infty}(i)^n$ (odd) = – i

1 $\Longleftrightarrow$ $(i^2 - 1).\sum_{n=1}^{\infty}(i)^n$ (odd) = – i

1 $\Longleftrightarrow$ $\sum_{n=1}^{\infty}(i)^n$**(odd) = – i/(i² – 1) = i/2 = (1/2).i** and this formula is

Formula 123

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(i)^n$ (odd) by i^2 until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number i^2 by itself until the infinity, we get 0 zero as a result.

$i^2*i^2*i^2*......\sum_{n=1}^{\infty}(i)^n$ (odd) = 0

$i^2*i^2*i^2*$.. = 0

** Formula 124:

We have : $\sum_{n=1}^{\infty}(i)^n$ (odd) = $i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}(i)^n$ (odd) by $1/i^2$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

3 = $(i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + \ldots) + (1/i^1 + 1/i^3 + 1/i^5 + 1/i^7 + 1/i^9 + 1/i^{11} + \ldots) = 0$

3 $\Longleftrightarrow$ $\sum_{n=-1}^{-\infty}(1/i^n) + \sum_{n=1}^{+\infty}(1/i^n) = 0$ and this formula is **Formula 124**

Hence n = 2k+1 and k ≥ 0 and k ∊ N , $\sum_{n=1}^{+\infty}(1/i^n) = 1/i^1 + 1/i^3 + 1/i^5 + 1/i^7 + 1/i^9 + 1/i^{11} + \ldots$

Hence n = 2k+1 and k ≤ -1 and k ∊ Z , $\sum_{n=-1}^{-\infty}(1/i^n) = 1/i^{-1} + 1/i^{-3} + 1/i^{-5} + 1/i^{-7} + 1/i^{-9} + 1/i^{-11} + \ldots$

** Formula 125:

We have : $\sum_{n=1}^{\infty}\overline{(i)}^n = 1/i^1 + 1/i^2 + 1/i^3 + 1/i^4 + 1/i^5 + 1/i^6 + 1/i^7 + 1/i^8 + 1/i^9 + 1/i^{10} + \ldots.$

$\sum_{n=1}^{\infty}\overline{(i)}^n = (1/i^1 + 1/i^3 + 1/i^5 + 1/i^7 + 1/i^9 + \ldots) + (1/i^2 + 1/i^4 + 1/i^6 + 1/i^8 + 1/i^{10} + \ldots)$

Let us denote this infinite series $1/i^1 + 1/i^3 + 1/i^5 + 1/i^7 + 1/i^9 + 1/i^{11} + \ldots$ by $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)

Hence $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)= $1/i^1 + 1/i^3 + 1/i^5 + 1/i^7 + 1/i^9 + 1/i^{11} + \ldots$

Let us denote this infinite series $1/i^2+1/i^4+1/i^6+1/i^8+1/i^{10}+1/i^{12}+\ldots$ by $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even)

Hence $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even)$= 1/i^2+1/i^4+1/i^6+1/i^8+1/i^{10}+1/i^{12}+\ldots$

We are going to multiply $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) by $1/i$ and we get this:

$1/i.\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)$= 1/i^2+1/i^4+1/i^6+1/i^8+1/i^{10}+1/i^{12}+\ldots$

Since $1/i.\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)$=\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even)

And since $\sum_{n=1}^{\infty}\overline{(i)}^n = \sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)$+\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even)

Therefore : $\sum_{n=1}^{\infty}\overline{(i)}^n = \sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)$+ 1/i.\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)

As a result : $\boldsymbol{\sum_{n=1}^{\infty}\overline{(i)}^n = (1+1/i).\sum_{n=1}^{\infty}\overline{(i)}^n}$ **(odd)** $\boldsymbol{= ((i+1)/i).\sum_{n=1}^{\infty}\overline{(i)}^n}$ **(odd)**

And this formula is **Formula 125**

** Formula 126 :

We have : $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $= 1/i^1+1/i^3+1/i^5+1/i^7+1/i^9+1/i^{11}+\ldots$

Now , let us calculate the sum of $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd)

we have: $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $= 1/i^1+1/i^3+1/i^5+1/i^7+1/i^9+1/i^{11}+\ldots$

$*1/i^2$ we are going to multiply $1/i^2$ by $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) and we get as a result this :

$1/i^2.\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $= 1/i^3+1/i^5+1/i^7+1/i^9+1/i^{11}+\ldots$

We have: $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $- 1/i = 1/i^3+1/i^5+1/i^7+1/i^9+1/i^{11}+\ldots$

Let us replace $\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $- 1/i$ its value and we get as a result this :

$1=\quad 1/i^2.\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $= \sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $- 1/i$

$1 \Longleftrightarrow 1/i^2.\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $- \sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $= - 1/i$

$1 \Longleftrightarrow (1/i^2 - 1).\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $= - 1/i$

$1 \Longleftrightarrow (i^2 - 1).\sum_{n=1}^{\infty}\overline{(i)}^n$ (odd) $= i$

$1 \Longleftrightarrow$ $\boldsymbol{\sum_{n=1}^{\infty}\overline{(i)}^n}$**(odd)** $\boldsymbol{= i/(i^2 - 1)=-i/2=(-1/2)i}$ and this formula is **Formula 126**

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(i)}^{n}$ (odd) by $1/i^2$ until the infinity?

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/i^2$** by itself until the infinity, we get 0 zero as a result.

$1/i^2 * 1/i^2 * 1/i^2 * ......\sum_{n=1}^{\infty}\overline{(i)}^{n}$ (odd) = 0

$1/i^2 * 1/i^2 * 1/i^2 *$...................................... = 0

** Formula 127 :

We have : $\sum_{n=1}^{\infty}\overline{(i)}^{n}$ (odd) = $1/i^1 + 1/i^3 + 1/i^5 + 1/i^7 + 1/i^9 + 1/i^{11} + ...$

Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=1}^{\infty}\overline{(i)}^{n}$ (odd) by i^2 until the infinity?

Using **theorem and notion 2 of Zero** we get as a result :

3 = $(1/i^1 + 1/i^3 + 1/i^5 + 1/i^7 + 1/i^9 + 1/i^{11} + ...) + (i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + ...) = 0$

3 $\Longleftrightarrow$ $\sum_{n=-1}^{-\infty} i^n + \sum_{n=1}^{+\infty} i^n = 0$ and this formula is **Formula 127**

Hence n = 2k+1 and k ≥ 0 and k ∊ N , $\sum_{n=1}^{+\infty} i^n = i^1 + i^3 + i^5 + i^7 + i^9 + i^{11} + ...$

Hence n = 2k+1 and k ≤ -1 and k ∊ Z , $\sum_{n=-1}^{-\infty} i^n = i^{-1} + i^{-3} + i^{-5} + i^{-7} + i^{-9} + i^{-11} + ...$

** The equality and similarity of Formula 124 and Formula 127:

$$\sum_{n=-1}^{-\infty} 1/i^n + \sum_{n=1}^{+\infty} 1/i^n = \sum_{n=-1}^{-\infty} i^n + \sum_{n=1}^{+\infty} i^n = 0$$

** Formula 128 :

We have : $\sum_{n=2}^{\infty}(i)^{n}$ (Even) = $i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + ...$

Now , let us calculate the sum of $\sum_{n=2}^{\infty}(i)^{n}$ (Even)

we have: $\sum_{n=2}^{\infty}(i)^{n}$ (Even) = $i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + ...$

$*i^2$ we are going to multiply i^2 by $\sum_{n=2}^{\infty}(i)^{n}$ (Even) and we get as a result this :

$i^2.\sum_{n=2}^{\infty}(i)^{n}$ (Even) = $i^4 + i^6 + i^8 + i^{10} + i^{12} + ...$

We have: $\sum_{n=2}^{\infty}(i)^{n}$ (Even) – i^2 = $i^4 + i^6 + i^8 + i^{10} + i^{12} + ...$

Let us replace $\sum_{n=2}^{\infty}(i)^{n}$ (Even) $- i^2$ its value and we get as a result this :

$$1= \quad i^2.\sum_{n=2}^{\infty}(i)^{n}\text{ (Even)} = \sum_{n=2}^{\infty}(i)^{n}\text{ (Even)} - i^2$$

$$1 \Longleftrightarrow \quad i^2.\sum_{n=2}^{\infty}(i)^{n}\text{ (Even)} - \sum_{n=2}^{\infty}(i)^{n}\text{ (Even)} = - i^2$$

$$1 \Longleftrightarrow (i^2 - 1).\sum_{n=2}^{\infty}(i)^{n}\text{ (Even)} = - i^2$$

$$1 \Longleftrightarrow \boldsymbol{\sum_{n=2}^{\infty}(i)^{n}\textbf{(Even)} = - i^2/(i^2 - 1) = -1/2}$$ and this formula is **Formula 128**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(i)^{n}$ (Even) by i^2 until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number $\mathbf{i^2}$ by itself until the infinity, we get 0 zero as a result.

$$i^2*i^2*i^2*\ldots\ldots\sum_{n=2}^{\infty}(i)^{n}\text{ (Even)} = 0$$

$$\mathbf{i^2*i^2*i^2*\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 0}$$

** Formula 129 :

We have : $\sum_{n=2}^{\infty}(i)^{n}$ (Even) $= i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + \ldots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}(i)^{n}$ (Even) by $1/i^2$ until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

$$3 = (i^2 + i^4 + i^6 + i^8 + i^{10} + i^{12} + \ldots) + 1 + (1/i^2 + 1/i^4 + 1/i^6 + 1/i^8 + 1/i^{10} + 1/i^{12} + \ldots) = 0$$

$$3 \Longleftrightarrow \boldsymbol{\sum_{n=-1}^{-\infty}(1/i^{2n}) + 1/i^{0} + \sum_{n=1}^{+\infty}(1/i^{2n}) = 0}$$

$$\boldsymbol{\sum_{n\in Z} 1/i^{2n} = 0}$$

and this formula is **Formula 129**

** Formula 130 :

We have : $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = $1/i^2 + 1/i^4 + 1/i^6 + 1/i^8 + 1/i^{10} + 1/i^{12} + \dots$

Now , let us calculate the sum of $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even)

we have: $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = $1/i^2 + 1/i^4 + 1/i^6 + 1/i^8 + 1/i^{10} + 1/i^{12} + \dots$

*$1/i^2$ we are going to multiply $1/i^2$ by $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) and we get as a result this :

$1/i^2.\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = $1/i^4 + 1/i^6 + 1/i^8 + 1/i^{10} + 1/i^{12} + \dots$

We have: $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) – $1/i^2$ = $1/i^4 + 1/i^6 + 1/i^8 + 1/i^{10} + 1/i^{12} + \dots$

Let us replace $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) – $1/i^2$ its value and we get as a result this :

1= $1/i^2.\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) – $1/i^2$

1 $\Longleftrightarrow$ $1/i^2.\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) - $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = – $1/i^2$

3 $\Longleftrightarrow$ $(1/i^2 - 1).\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = – $1/i^2$

1 $\Longleftrightarrow$ **$\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = $1/(i^2 - 1) = -1/2$** and this formula is **Formula 130**

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) by $1/i^2$ until the infinity?</u>

Using **theorem and notion 1 of Zero** that states if we multiply a number **$1/i^2$** by itself until the infinity, we get 0 zero as a result.

$1/i^2 * 1/i^2 * 1/i^2 * \dots\dots\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = 0

$1/i^2 * 1/i^2 * 1/i^2 *$ …………………………………… = 0

** Formula 131:

We have : $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) = $1/i^2 + 1/i^4 + 1/i^6 + 1/i^8 + 1/i^{10} + 1/i^{12} + \dots$

<u>Question: what will be the result if we repeat multiplying this infinite series $\sum_{n=2}^{\infty}\overline{(i)}^n$ (Even) by i^2 until the infinity?</u>

Using **theorem and notion 2 of Zero** we get as a result :

3 = $(1/i^2 +1/i^4+1/i^6 +1/i^8+1/i^{10} +1/i^{12}+...) +1+ (i^2 +i^4+i^6 +i^8+i^{10} +i^{12}+...) = 0$

3 $\Longleftrightarrow \sum_{n=-1}^{-\infty} i^{2n} + i^0 + \sum_{n=1}^{+\infty} i^{2n} = 0$

$$\sum_{n \in Z} i^{2n} = 0$$

and this formula is **Formula 131**

** The equality and similarity of Formula 129 and Formula 131:

$$\sum_{n=-1}^{-\infty}(1/i^{2n}) + 1/i^0 + \sum_{n=1}^{+\infty}(1/i^{2n}) = \sum_{n=-1}^{-\infty} i^{2n} + i^0 + \sum_{n=1}^{+\infty} i^{2n} = 0$$

$$\sum_{n \in Z} 1/i^{2n} = \sum_{n \in Z} i^{2n} = 0$$

PART 3

GENERAL FORMULAS 3

** Method and formula 132: Relationship between the sum of natural numbers and the sum of odd numbers

We have : **Z(s)** = $\sum_{n=1}^{\infty} 1/n^s = \frac{1}{1^s} + \frac{1}{2^s} + \frac{1}{3^s} + \frac{1}{4^s} + \frac{1}{5^s} + \frac{1}{6^s} + \frac{1}{7^s} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.$

And we have : **Z(-1) = 1+2+3+4+5+6+7+8+9+10+11+...............**

Let **Z(-1)** be $\sum All.Numbers$

Hence **Z(-1)** = $\sum All.Numbers$ =1+2+3+4+5+6+7+8+9+10+11+..............

Therefore : $\sum All.Numbers$= (1+3+5+7+9+11+13+...) + (2+4+6+8+10+12+14+...)

Let denote 1+3+5+7+9+11+13+.... by $\sum odd$, hence $\sum odd$ = 1+3+5+7+9+11+13+...

Let denote 2+4+6+8+10+12+.... by $\sum Even$, hence $\sum Even$ = 2+4+6+8+10+12+....

Then $\sum All.Numbers = \sum odd + \sum Even$

We have : **Z(1) = 1 + 1/2 + 1/3 + 1/4 +1/5 + 1/6 + 1/7 + 1/8 + 1/9 + 1/10 + 1/11 + ...**

Let **Z(1)** be $\sum \overline{All.Numbers}$

Hence **Z(1)** = $\sum \overline{All.Numbers}$ =1+1/2+1/3+1/4+1/5+1/6+1/7+1/8+1/9+1/10+1/11+...

Therefore : $\sum \overline{All.Numbers}$= (1+1/3+1/5+1/7+1/9+...) +(1/2+1/4+1/6+1/8+1/10+...)

Let denote 1+1/3+1/5+1/7+1/9+.... By $\sum \overline{odd}$, hence $\sum \overline{odd}$ = 1+1/3+1/5+1/7+1/9 +...

Let denote 1/2+1/4+1/6+1/8 +.... By $\sum \overline{Even}$, hence $\sum \overline{Even}$ = 1/2+1/4+1/6+1/8 +....

Then $\sum \overline{All.Numbers} = \sum \overline{odd} + \sum \overline{Even}$

Let **Z'(S)** be **Z(- S)** , hence **Z'(S) = Z(- S) = $1^s + 2^s + 3^s + 4^s + 5^s + 6^s + 7^s + 8^s + 9^s + 10^s + 11^s$ + ...**

Let denote 1+ 3^s+ 5^s+ 7^s+ 9^s+.... By $\sum_{s/s} \boldsymbol{odd}$, hence $\sum_{s/s} \boldsymbol{odd}$ = 1+ 3^s+ 5^s+ 7^s+ 9^s +...

Let denote 2^s+ 4^s+ 6^s+ 8^s +.... By $\sum_{s/s} \boldsymbol{Even}$, hence $\sum_{s/s} \boldsymbol{Even}$ = 2^s+ 4^s+ 6^s+ 8^s + ...

Then **Z'(S) = Z(- S)** = $\sum_{s/s} \boldsymbol{odd} + \sum_{s/s} \boldsymbol{Even}$

Z(S) = $1/1^s + 1/2^s + 1/3^s + 1/4^s + 1/5^s + 1/6^s + 1/7^s + 1/8^s + 1/9^s + 1/10^s + 1/11^s$ + ...

Z(S) = ($1/1^s + 1/3^s + 1/5^s + 1/7^s + 1/9^s + 1/11^s$ +....) + ($1/2^s + 1/4^s + 1/6^s + 1/8^s + 1/10^s$ + ...)

Let denote $1/1^s + 1/3^s + 1/5^s + 1/7^s + ...$ By $\sum_{s/s} \overline{odd}$, hence $\sum_{s/s} \overline{odd} = 1/1^s + 1/3^s + 1/5^s + 1/7^s + ...$

Let denote $1/2^s + 1/4^s + 1/6^s + 1/8^s + ...$ By $\sum_{s/s} \overline{Even}$,hence$\sum_{s/s} \overline{Even} = 1/2^s + 1/4^s + 1/6^s + 1/8^s + ...$

Then **Z(S) =** $\sum_{s/s} \overline{odd} + \sum_{s/s} \overline{Even}$

Now let us determine the relationship between the sum of natural numbers and the sum of odd numbers

Z(-1) = $\sum All.Numbers$ = 1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17+18

+19+20+21+22+23+24+25+26+27+28+29+30+31+32+33

+34+35+36+37+38+39+40+41+................................

Let us delete all even pure numbers and all odd numbers; we will get as a result:

$$\boxed{1} \quad \sum All.Numbers - \sum odd - \sum_{n=1}^{\infty} even.p = \text{Rest}$$

Hence Rest is a result

Rest= 6+10+12+14+18+20+22+24+26+28+30+34+36+38+40+42+44

+46+48+50+52+54+56+58+60+62+66+68+70+72+74+76+78+.................

Then:

Rest = 2*(3+5+7+9+11+13+15+17+19+21+23+...........)

+

4*(3+5+7+9+11+13+15+17+19+21+23+...........)

+

8*(3+5+7+9+11+13+15+17+19+21+23+...........)

+

16*(3+5+7+9+11+13+15+17+19+21+23+...........)

+

....

+

....

Therefore

Rest = 2^1*(3+5+7+9+11+13+15+17+19+21+23+............)

+

2^2*(3+5+7+9+11+13+15+17+19+21+23+............)

+

2^3*(3+5+7+9+11+13+15+17+19+21+23+............)

+

2^4*(3+5+7+9+11+13+15+17+19+21+23+............)

+

....

+

....

Then : **Rest** = (2^1 +2^2 +2^3 +2^4 +2^5 +......) * (3+5+7+9+11+13+15+17+19+21+23+......)

We have $\sum odd$ = 1+3+5+7+9+11+13+15+17+........

Then : $\sum odd - 1$ = 3+5+7+9+11+13+15+17+........

Using Formula 1 , we get :

2^1 +2^2 +2^3 +2^4 +2^5 +........ = $\sum_{n=1}^{\infty} even.p$ = -2

Therefore: 2 $\boxed{2}$ **Rest =** $\sum_{n=1}^{\infty} even.p * (\sum odd - 1)$

We have the equation 1 is equal to :

$$\sum All.Numbers - \sum odd - \sum_{n=1}^{\infty} even.p = \text{Rest}$$

Let us substitute the value of Rest into this equation

$\boxed{3}$ = $\sum All.Numbers - \sum odd - (-2) = -2*\sum odd + 2$

$\boxed{3}$ $\Longleftrightarrow$ $\sum All.Numbers - \sum odd + 2 = -2*\sum odd + 2$

$\boxed{3}$ $\Longleftrightarrow$ $\sum All.Numbers - \sum odd = -2*\sum odd$

$\boxed{3}$ $\Longleftrightarrow$ $\sum All.Numbers = - \sum odd$

$\boxed{3}$ $\Longleftrightarrow$ $\sum All.Numbers + \sum odd = 0$

** Method and Formula 133: Relationship between the sum of reciprocal of natural numbers and the sum of reciprocal of odd numbers

Z(1) = $\sum \overline{All.Numbers}$ = 1+1/2+1/3+1/4+1/5+1/6+1/7+1/8+1/9+1/10+1/11

+1/12+1/13+1/14+1/15+1/16+1/17+1/18+1/19+1/20+1/21+1/22

+1/23+1/24+1/25+1/26+1/27+1/28+1/29+1/30+1/31+1/32

+1/34+1/35+1/36+1/37+1/38+1/39+1/40+1/41+.................

Let us delete all reciprocals of even pure numbers and all reciprocals of odd numbers; we will get as a result:

$\boxed{1}$ $\sum \overline{\boldsymbol{All.Numbers}}$ - $\sum \overline{\boldsymbol{odd}}$ - $\sum_{n=1}^{\infty} \overline{\boldsymbol{even.p}}$ = $\overline{\textbf{Rest}}$

Hence Rest is a result

$\overline{\textbf{Rest}}$=

1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+1/36+1/38 +1/40+1/42+1/44+1/46+1/48+1/50+1/52+1/54+1/56+1/58+1/60+1/62+1/66 +1/68+1/70+1/72+1/74+1/76+1/78+.................

Then:

$\overline{\textbf{Rest}}$ = 1/2*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...........)

+

1/4*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...........)

+

1/8*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...........)

+

1/16*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...........)

+

....

+

....

Therefore

$\overline{\textbf{Rest}}$ = $1/2^1*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+\ldots\ldots\ldots)$

+

$1/2^2*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+\ldots\ldots\ldots)$

+

$1/2^3*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+\ldots\ldots\ldots)$

+

$1/2^4*(1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+\ldots\ldots\ldots)$

+

....

+

....

Then : $\overline{\textbf{Rest}}$ $= (1/2^1 +1/2^2 +1/2^3 +1/2^4 +1/2^5 +\ldots\ldots)*(1/3+1/5+1/7+1/9+1/11+1/13\ldots)$

We have $\sum \overline{odd}$ $= 1+1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+\ldots\ldots$

Then : $\sum \overline{odd} - 1 = 1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+\ldots\ldots$

Using Formula 3 , we get :

$1/2^1 +1/2^2 +1/2^3 +1/2^4 +1/2^5 +\ldots\ldots = \sum_{n=1}^{\infty} \overline{even.p} = 1$

Therefore: $\boxed{2}$ $\textbf{Rest} = \sum_{n=1}^{\infty} \overline{even.p} * (\sum \overline{odd} - 1)$

We have the equation 1 is equal to :

$$\sum \overline{All.Numbers} - \sum \overline{odd} - \sum_{n=1}^{\infty} \overline{even.p} = \overline{\text{Rest}}$$

Let us substitute the value of $\overline{\text{Rest}}$ into this equation

$\boxed{3}$ $= \sum \overline{All.Numbers} - \sum odd - \sum_{n=1}^{\infty} \overline{even.p} = \sum \overline{odd} - 1$

$\boxed{3} \Longleftrightarrow \sum \overline{All.Numbers} - \sum \overline{odd} - 1 = \sum \overline{odd} - 1$

$\boxed{3} \Longleftrightarrow \sum \overline{All.Numbers} = 2*\sum \overline{odd}$

$\boxed{3} \Longleftrightarrow \sum \overline{\boldsymbol{All.Numbers}} = 2 \sum \overline{\boldsymbol{odd}}$ this is Method and Formula 133

$\boxed{3} \Longleftrightarrow \sum \overline{\boldsymbol{All.Numbers}} - 2\sum \overline{\boldsymbol{odd}} = 0$

** Method and Formula 134: Relationship between Zeta Prime Z'(S) and the sum of odd numbers that its exponent is a complex number S

We have :

$$Z'(S) = Z(-S) = 1^S+2^S+3^S+4^S+5^S+6^S+7^S+8^S+9^S+10^S+11^S+12^S+13^S+14^S+15^S+16^S+17^S+18^S$$

$$+19^S+20^S+21^S+22^S+23^S+24^S+25^S+26^S+27^S+28^S+29^S+30^S+31^S+32^S+33^S$$

$$+34^S+35^S+36^S+37^S+38^S+39^S+40^S+41^S+\ldots\ldots$$

Let us delete all even pure numbers that its exponent is a complex numbers S, and all odd numbers that its exponent is a complex numbers ; we will get as a result:

1
$$Z'(S) - \sum_{s/s} odd \quad - \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p = \quad {}_{s/s}Rest$$

Hence Rest is a result

$${}_{s/s}Rest = 6^S+10^S+12^S+14^S+18^S+20^S+22^S+24^S+26^S+28^S+30^S+34^S+36^S+38^S+40^S+42^S$$

$$+44^S+46^S+48^S+50^S+52^S+54^S+56^S+58^S+60^S+62^S+66^S+68^S+70^S+72^S+74^S+76^S+78^S+\ldots..$$

Then:

$${}_{s/s}Rest = \quad 2^S*(3^S+5^S+7^S+9^S+11^S+13^S+15^S+17^S+19^S+21^S+23^S+\ldots\ldots)$$

$+$

$$4^S*(3^S+5^S+7^S+9^S+11^S+13^S+15^S+17^S+19^S+21^S+23^S+\ldots\ldots)$$

$+$

$$8^S*(3^S+5^S+7^S+9^S+11^S+13^S+15^S+17^S+19^S+21^S+23^S+\ldots\ldots)$$

$+$

$$16^S*(3^S+5^S+7^S+9^S+11^S+13^S+15^S+17^S+19^S+21^S+23^S+\ldots\ldots)$$

$+$

$$\ldots\ldots\ldots\ldots\ldots\ldots$$

$+$

$$\ldots\ldots\ldots\ldots\ldots\ldots$$

Therefore

$_{s/s}Rest$ = $2^s*(3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+............)$

+

$2^{2s}*(3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+............)$

+

$2^{3s}*(3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+............)$

+

$2^{4s}*(3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+............)$

+

....

+

....

Then: $_{s/s}Rest = (2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s}+......) * (3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+......)$

We have $\sum_{s/s} \boldsymbol{odd} = 1^s+3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+........$

Then : $\sum_{s/s} \boldsymbol{odd} - 1 = 3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+........$

Using Formula 5 , we get :

$$\sum_{\substack{n=1\\s/s}}^{\infty} even.p = 2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s}+........ = -2^s/(2^s-1)$$

Therefore: $\boxed{2}$

$$_{s/s}\boldsymbol{Rest} = \sum_{\substack{n=1\\s/s}}^{\infty} \boldsymbol{even.p} * (\sum_{s/s} \boldsymbol{odd} - 1)$$

$$_{s/s}\boldsymbol{Rest} = -2^s/(2^s-1) * (\sum_{s/s} \boldsymbol{odd} - 1)$$

We have the equation 1 is equal to :

$$Z'(S) - \sum_{s/s} \boldsymbol{odd} - \sum_{\substack{n=1\\s/s}}^{\infty} even.p = {}_{s/s}Rest$$

Let us substitute the value of $_{s/s}Rest$ into this equation

$$\boxed{3} = Z'(S) - \sum_{s/s} \boldsymbol{odd} - \sum_{\substack{n=1\\s/s}}^{\infty} even.p = \boldsymbol{-2^s/(2^s-1)*(\sum_{s/s} odd - 1)}$$

3 $\Longleftrightarrow$ Z'(S) $- \sum_{s/s} odd$ $-(-2^s/(2^s-1)) = -2^s/(2^s-1)*\sum_{s/s} odd$ $+ 2^s/(2^s-1)$

3 $\Longleftrightarrow$ Z'(S) $- \sum_{s/s} odd$ $+ 2^s/(2^s-1)$ $= -2^s/(2^s-1)*\sum_{s/s} odd$ $+ 2^s/(2^s-1)$

3 $\Longleftrightarrow$ **Z'(S)** $- \sum_{s/s} \boldsymbol{odd}$ $= -2^s/(2^s-1)*\sum_{s/s} odd$

3 $\Longleftrightarrow$ **Z'(S) =** $\sum_{s/s} \boldsymbol{odd}$ $-2^s/(2^s-1)*\sum_{s/s} \boldsymbol{odd}$

3 $\Longleftrightarrow$ **Z'(S) =** $\sum_{s/s} \boldsymbol{odd}$ $\mathbf{(1 - 2^s/(2^s-1))*}\sum_{s/s} \boldsymbol{odd}$

3 $\Longleftrightarrow$ **Z'(S) = Z(-S) =** $\mathbf{-1/(2^s-1)*}\sum_{s/s} \boldsymbol{odd}$

this is Method and Formula 134

** Method and Formula 135: Relationship between Zeta Z(S) and the sum of reciprocal odd numbers that its exponent is a complex number S

We have :

Z'(S) = $1^s+1/2^s+1/3^s+1/4^s+1/5^s+1/6^s+1/7^s+1/8^s+1/9^s+1/10^s+1/11^s+1/12^s+1/13^s$

$+1/14^s+1/15^s+1/16^s+1/17^s+1/18^s+1/19^s+1/20^s+1/21^s+1/22^s+1/23^s+1/24^s$

$+1/25^s+1/26^s+1/27^s+1/28^s+1/29^s+1/30^s+1/31^s+1/32^s+1/33^s+1/34^s+1/35^s$

$+1/36^s+1/37^s+1/38^s+1/39^s+1/40^s+1/41^s+$..

Let us delete all reciprocals of even pure numbers that its exponent is a complex numbers S, and all reciprocals of odd numbers that its exponent is a complex numbers ; we will get as a result:

$$\boxed{1} \qquad \mathbf{Z(S)} - \sum_{s/s} \overline{odd} \quad - \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} = {}_{s/s}\overline{Rest}$$

Hence Rest is a result :

${}_{s/s}\overline{Rest}$ = $1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s$

$+1/34^s+1/36^s+1/38^s+1/40^s+1/42^s+1/44^s+1/46^s+1/48^s+1/50^s+1/52^s+1/54^s+1/56^s$

$+1/58^s+1/60^s+1/62^s+1/66^s+1/68^s+1/70^s+1/72^s+1/74^s+1/76^s+1/78^s+$.................

Then:

$$_{s/s}\overline{Rest} = 1/2^s*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

$$1/4^s*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

$$1/8^s*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

$$1/16^s*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

....

$+$

....

Therefore

$$_{s/s}\overline{Rest} = 1/2^s*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

$$1/2^{2s}*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

$$1/2^{3s}*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

$$1/2^{4s}*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+\ldots)$$

$+$

....

$+$

....

Then: $_{s/s}\overline{Rest} = (1/2^s +1/2^{2s} +1/2^{3s} +1/2^{4s} +1/2^{5s}+\ldots)*(1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+\ldots)$

We have $\sum_{s/s}\overline{\boldsymbol{odd}} = 1^s+1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s +\ldots\ldots$

Then : $\sum_{s/s}\overline{\boldsymbol{odd}} - 1 = 1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s +\ldots\ldots$

Using Formula 5 , we get :

$$\sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + \dots\dots = 1/(2^s - 1)$$

Therefore: 2

$$_{s/s}\overline{\boldsymbol{Rest}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{\boldsymbol{even.p}} * (\sum_{s/s} \overline{\boldsymbol{odd}} - 1)$$

$$_{s/s}\overline{\boldsymbol{Rest}} = \mathbf{1/(2^s - 1) * (\sum_{s/s} \overline{odd} - 1)}$$

We have the equation 1 is equal to :

$$Z(S) - \sum_{s/s} \overline{\boldsymbol{odd}} - \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} = {}_{s/s}\overline{Rest}$$

Let us substitute the value of $_{s/s}\overline{Rest}$ into this equation

3 $= Z(S) - \sum_{s/s} \overline{\boldsymbol{odd}} - \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} = \mathbf{1/(2^s - 1) * (\sum_{s/s} \overline{odd} - 1)}$

3 $\Longleftrightarrow$ $Z(S) - \sum_{s/s} \overline{\boldsymbol{odd}} - \mathbf{(1/(2^s - 1))} = \mathbf{1/(2^s - 1) * \sum_{s/s} \overline{odd}} - \mathbf{1/(2^s - 1)}$

3 $\Longleftrightarrow$ $Z(S) - \sum_{s/s} \overline{\boldsymbol{odd}} = \mathbf{1/(2^s - 1) * \sum_{s/s} \overline{odd}}$

3 $\Longleftrightarrow$ $\mathbf{Z(S) = \sum_{s/s} \overline{odd} + 1/(2^s - 1) * \sum_{s/s} \overline{odd}}$

3 $\Longleftrightarrow$ $\mathbf{Z(S) = (1 + 1/(2^s - 1)) * \sum_{s/s} \overline{odd}}$

3 $\Longleftrightarrow$ $\mathbf{Z(S) = 2^s/(2^s - 1) * \sum_{s/s} \overline{odd}}$

this is Method and Formula 135

** Method and Formula 136: Relationship between the sum of even numbers and the sum of odd numbers and the relationship between the sum of even numbers and the sum of all numbers

1 $= \sum Even = 2+4+6+8+10+12+14+16+18+20+22+24+26+28+30+32+34+36+38$

$+40+42+44+46+48+50+52+54+56+58+60+62+64+66+68+70+72\dots\dots$

1 $\Longleftrightarrow \sum Even$=(2+4+8+16+32+64+..)+(6+10+12+14+18+20+22+24+26+28+30+34+..)

We have : $\sum_{n=1}^{\infty} even.p$ = 2+4+8+16+32+64+... = $2^1+2^2+2^3+2^4+2^5+2^6+2^7+$...

We substitute the left part of the equation and we get as a result:

1 $\Longleftrightarrow \sum Even$=$\sum_{n=1}^{\infty} even.p$ + (6+10+12+14+18+20+22+24+26+28+30+34+...)

Then:

1 $\Longleftrightarrow \sum Even$=$\sum_{n=1}^{\infty} even.p$

+ (6+10+12+14+18+20+22+24+26+28+30+34+...)

1 $\Longleftrightarrow \sum Even$=$\sum_{n=1}^{\infty} even.p$

+ 2^1 * (3+5+7+9+11+13+15+17+19+21+23+...)

+ 2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+...)

We have : $\sum odd$ = 1+3+5+7+9+11+13+15+17+19+21+23+........

Then : $\sum odd$ -1 = 3+5+7+9+11+13+15+17+19+21+23+........

Let us substitute this value in the equation 1 , we get as a result :

1 $\Longleftrightarrow \sum Even$ = $\sum_{n=1}^{\infty} even.p$

+ 2^1 * ($\sum odd$ - 1)

+ 2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+...)

1 $\Longleftrightarrow \sum Even$ = $\sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1)

+ 2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+...)

We repeat the same operation and we get :

1 $\Longleftrightarrow \sum Even$ = $\sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1)

+ 2^1 *2^1 * (3+5+7+9+11+13+15+17+19+21+23+...)

+ 2^1 *2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+...)

We have : $\sum odd$ -1 = 3+5+7+9+11+13+15+17+19+21+23+........

Therefore :

1 ⟺ $\sum Even = \sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1)

+ 2^2 * (3+5+7+9+11+13+15+17+19+21+23+…)

+ 2^1 *2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+…)

We have : $\sum odd$ -1 = 3+5+7+9+11+13+15+17+19+21+23+……..

Then :

1 ⟺ $\sum Even = \sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1)

+ 2^2 * ($\sum odd$ - 1)

+ 2^1 *2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+…)

So we get :

1 ⟺ $\sum Even = \sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1) + 2^2 * ($\sum odd$ - 1)

+ 2^1 *2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+…)

We repeat the same operation:

1 ⟺ $\sum Even = \sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1) + 2^2 * ($\sum odd$ - 1)

+ 2^1 *2^1 *2^1 * (3+5+7+9+11+13+15+17+19+21+23+…)

+ 2^1 *2^1 *2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+…)

Then:

1 ⟺ $\sum Even = \sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1) + 2^2 * ($\sum odd$ - 1)

+ 2^3 * (3+5+7+9+11+13+15+17+19+21+23+…)

+ 2^1 *2^1 *2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+…)

We have : $\sum odd$ -1 = 3+5+7+9+11+13+15+17+19+21+23+……..

Therefore:

1 ⟺ $\sum Even = \sum_{n=1}^{\infty} even.p$ + 2^1 * ($\sum odd$ - 1) + 2^2 * ($\sum odd$ - 1)

+ 2^3 * ($\sum odd$ - 1)

+ 2^1 *2^1 *2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+…)

Then:

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p + 2^1 * (\sum odd - 1) + 2^2 * (\sum odd - 1) + 2^3 * (\sum odd - 1)$$

$$+ 2^1 * 2^1 * 2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+\ldots)$$

We get as a result:

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p + (2^1 + 2^2 + 2^3) * (\sum odd - 1)$$

$$+ 2^1 * 2^1 * 2^1 * (6+10+12+14+18+20+22+24+26+28+30+34+\ldots)$$

So we repeat the same operation until the infinity and we get as a result:

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p + (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots..) * (\sum odd - 1)$$

$$+ (2^1 * 2^1 * 2^1 * \ldots\ldots\ldots) (6+10+12+14+18+20+22+24+26+28+30+34+\ldots)$$

<u>Using theorem and notion 1 of Zero</u> , we get as a result:

$$2^1 * 2^1 * 2^1 * \ldots\ldots\ldots = 0 \Longrightarrow (2^1 * 2^1 * 2^1 * \ldots) (6+10+12+14+18+20+22+24+26+\ldots) = 0$$

Then:

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p + (2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots..) * (\sum odd - 1)$$

<u>Using Formula 1</u>, we have:

$$\sum_{n=1}^{\infty} even.p = 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots.. = -2$$

Therefore the equation 1 will be:

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p + \sum_{n=1}^{\infty} even.p * (\sum odd - 1)$$

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p + (\sum_{n=1}^{\infty} even.p * \sum odd) - \sum_{n=1}^{\infty} even.p$$

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p * \sum odd$$

$$\textcircled{1} \Longleftrightarrow \sum Even = \sum_{n=1}^{\infty} even.p * \sum odd$$

$$\textcircled{1} \Longleftrightarrow \sum Even = -2 \sum odd$$

$$\textcircled{1} \Longleftrightarrow \sum Even + 2 \sum odd = 0$$

$$\textcircled{1} \Longleftrightarrow \sum Even + \sum odd + \sum odd = 0$$

We have $\sum All.Numbers = \sum odd + \sum Even$

Then: $\sum All.Numbers + \sum odd = 0$

As conclusion we get:

1 $\Longleftrightarrow$ $\sum \boldsymbol{Even} = -2\sum \boldsymbol{odd}$

$\sum \boldsymbol{Even} + 2\sum \boldsymbol{odd} = 0$

$\sum \boldsymbol{Even} = 2\sum \boldsymbol{All.Numbers}$

$\sum \boldsymbol{Even} - 2\sum \boldsymbol{All.Numbers} = 0$

This is Method and Formula 136

** Method and Formula 137: Relationship between the sum of reciprocals of even numbers and the sum of reciprocals of odd numbers and the relationship between the sum of reciprocals of even numbers and the sum of reciprocals of all numbers

$\boxed{1}$ = $\sum \overline{Even}$ = 1/2+1/4+1/6+1/8+1/10+1/12+1/14+1/16+1/18+1/20+1/22+1/24

+1/26+1/28+1/30+1/32+1/34+1/36+1/38+1/40+1/42+1/44+1/46+1/48+1/50

+1/52+1/54+1/56+1/58+1/60+1/62+1/64+1/66+1/68+1/70+1/72……

1 $\Longleftrightarrow$ $\sum \overline{Even}$=(1/2+1/4+1/8+1/16+..)+(1/6+1/10+1/12+1/14+1/18+1/20+1/22+..)

<u>Using Formula 3</u> we have :

$\sum_{n=1}^{\infty} \overline{even.p}$ = 1/2+1/4+1/8+1/16+1/32+…= $1/2^1+1/2^2+1/2^3+1/2^4+1/2^5+\ldots$

We substitute the left part of the equation and we get as a result:

1 $\Longleftrightarrow$ $\sum \overline{Even}$=$\sum_{n=1}^{\infty} \overline{even.p}$ + (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+…)

Then:

1 $\Longleftrightarrow$ $\sum \overline{Even}$=$\sum_{n=1}^{\infty} \overline{even.p}$

+ (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$

$+ 1/2^1 * (1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...)$

$+1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+...)$

We have : $\sum \overline{odd} = 1 + 1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...$

Then : $\sum \overline{odd} - 1 = 1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...$

Let us substitute this value in the equation 1 , we get as a result :

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$

$+ 1/2^1 * (\sum \overline{odd} - 1)$

$+1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+...)$

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} + 1/2^1 * (\sum \overline{odd} - 1)$

$+1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+...)$

We repeat the same operation and we get :

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} + 1/2^1 * (\sum \overline{odd} - 1)$

$+ 1/2^1 * 1/2^1 * (1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...)$

$+ 1/2^1 * 1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+...)$

We have : $\sum \overline{odd} - 1 = 1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...$

Therefore :

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} + 1/2^1 * (\sum \overline{odd} - 1)$

$+ 1/2^2 * (1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...)$

$+ 1/2^1 * 1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+...)$

We have : $\sum \overline{odd} - 1 = 1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+...$

Then :

(1) $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$ + 1/2^1 * ($\sum \overline{odd}$ - 1)

+ 1/2^2 * ($\sum \overline{odd}$ - 1)

+ 1/2^1 *1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

So we get :

(1) $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$ + 1/2^1 * ($\sum \overline{odd}$ - 1) + 1/2^2 * ($\sum \overline{odd}$ - 1)

+ 1/2^1 *1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

We repeat the same operation:

(1) $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$ + 1/2^1 * ($\sum \overline{odd}$ - 1) + 1/2^2 * ($\sum \overline{odd}$ - 1)

+1/2^1 *1/2^1 *1/2$^{1\,*}$ (1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+…)

+ 1/2^1 *1/2^1 * 1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

Then:

(1) $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$ + 1/2^1 * ($\sum \overline{odd}$ - 1) + 1/2^2 * ($\sum \overline{odd}$ - 1)

+1/2^3 * (1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+…)

+ 1/2^1 *1/2^1 * 1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

We have : $\sum \overline{odd}$ -1 = 1/3+1/5+1/7+1/9+1/11+1/13+1/15+1/17+1/19+1/21+1/23+…

Therefore:

(1) $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$ + 1/2^1 * ($\sum \overline{odd}$ - 1) + 1/2^2 * ($\sum \overline{odd}$ - 1)

+ 1/2^3 * ($\sum \overline{odd}$ - 1)

+ 1/2^1 *1/2^1 * 1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

Then:

(1) $\Longleftrightarrow \sum \overline{Even}=\sum_{n=1}^{\infty} \overline{even.p}$ +1/2^1*($\sum \overline{odd}$ - 1)+1/2^2 *($\sum \overline{odd}$ - 1)+1/2^3 *($\sum \overline{odd}$ - 1)

+ 1/2^1 *1/2^1 * 1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

We get as a result:

(1) $\Longleftrightarrow \sum \overline{Even}=\sum_{n=1}^{\infty} \overline{even.p}$ + (1/2^1 + 1/2^2 + 1/2^3)*($\sum \overline{odd}$ - 1)

+ 1/2^1 *1/2^1 * 1/2^1 * (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+…)

So we repeat the same operation until the infinity and we get as a result:

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p}$ + $(1/2^1 + 1/2^2 + 1/2^3 +1/2^4 + 1/2^5 +.....)*(\sum \overline{odd} - 1)$

$+(1/2^1 *1/2^1 * 1/2^1 *...)$ (1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+1/26+1/28+1/30+1/34+...)

Using theorem and notion 1 of Zero , we get as a result:

$1/2^1*1/2^1*1/2^1*... = 0 \Longrightarrow (1/2^1 *1/2^1 *1/2^1 *...)(1/6+1/10+1/12+1/14+1/18+1/20+1/22+1/24+...) = 0$

Then:

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} + (1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 +...)*(\sum \overline{odd} - 1)$

Using Formula 3, we have:

$\sum_{n=1}^{\infty} \overline{even.p} = 1/2^1 + 1/2^2 + 1/2^3 + 1/2^4 + 1/2^5 +..... = 1$

Therefore the equation 1 will be:

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} + \sum_{n=1}^{\infty} \overline{even.p} *(\sum \overline{odd} - 1)$

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} + (\sum_{n=1}^{\infty} \overline{even.p} * \sum \overline{odd}) - \sum_{n=1}^{\infty} \overline{even.p}$

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} * \sum \overline{odd}$

1 $\Longleftrightarrow \sum \overline{Even} = \sum_{n=1}^{\infty} \overline{even.p} * \sum \overline{odd}$

1 $\Longleftrightarrow \sum \overline{Even} = \sum \overline{odd}$

1 $\Longleftrightarrow \sum \overline{Even} - \sum \overline{odd} = 0$

Using Method and Formula 133, we have:

$\sum \overline{All.Numbers} = 2 \sum \overline{odd}$

Then:

$\sum \overline{odd} = 1/2 \sum \overline{All.Numbers}$

We substitute in the equation 1, and we get as a result:

1 $\Longleftrightarrow \sum \overline{Even} = 1/2 \sum \overline{All.Numbers}$

1 $\Longleftrightarrow \sum \overline{All.Numbers} = 2 \sum \overline{Even}$

As a conclusion, we get:

1 $\Longleftrightarrow$ $\sum \overline{Even} = \sum \overline{odd}$

$\sum \overline{Even} - \sum \overline{odd} = 0$

$\sum \overline{Even} = 1/2 \sum \overline{All.Numbers}$

$\sum \overline{Even} - 1/2 \sum \overline{All.Numbers} = 0$

$\sum \overline{All.Numbers} = 2 \sum \overline{Even}$

$\sum \overline{All.Numbers} - 2 \sum \overline{Even} = 0$

$\sum \overline{odd} = 1/2 \sum \overline{All.Numbers}$

This is Method and Formula 137

** Method and Formula 138: Relationship between the sum of even numbers that its exponent is a complex numbers S, and the sum of odd numbers that its exponent is a complex numbers S, and the relationship between the sum of even numbers that its exponent is a complex numbers S, and Zeta Prime Z'(S)

$\boxed{1}$ $= \sum_{s/s} \boldsymbol{Even} = 2^s+4^s+6^s+8^s+10^s+12^s+14^s+16^s+18^s+20^s+22^s+24^s+26^s+28^s+30^s$

$+32^s+34^s+36^s+38^s+40^s+42^s+44^s+46^s+48^s+50^s+52^s+54^s+56^s+58^s$

$+60^s+62^s+64^s+66^s+68^s+70^s+72^s$......

1 $\Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = (2^s+4^s+8^s+16^s+32^s+64^s+128^s+512^s+1024^s+2048^s+4096^s.....)$

$+(6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28^s+30^s+34^s+.....)$

We have : $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p = 2^s+4^s+8^s+16^s+32^s+64^s+... = 2^s+2^{2s}+2^{3s}+2^{4s}+2^{5s}+2^{6s}+2^{7s}+...$

We substitute the left part of the equation and we get as a result:

$\textcircled{1} \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ $+(6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28^s+30^s+\ldots)$

Then:

$\textcircled{1} \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$

$+ (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28^s+30^s+34^s+\ldots)$

$\textcircled{1} \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$

$+ 2^s * (3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots)$

$+ 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$

We have : $\sum_{s/s} odd = 1+3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots\ldots..$

Then : $\sum_{s/s} odd -1 = 3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots\ldots..$

Let us substitute this value in the equation 1 , we get as a result :

$\textcircled{1} \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$

$+ 2^s * (\sum_{s/s} odd - 1)$

$+ 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$

$\textcircled{1} \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p + 2^s * (\sum_{s/s} odd - 1)$

$+ 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$

We repeat the same operation and we get :

$\textcircled{1} \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p + 2^s * (\sum_{s/s} odd - 1)$

$+ 2^s *2^s * (3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots)$

$+ 2^s *2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$

We have : $\sum_{s/s} odd -1 = 3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots$

Therefore :

$$1 \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p + 2^s * (\sum_{s/s} odd - 1)$$

$$+ 2^{2s} * (3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots)$$

$$+ 2^s * 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$$

We have : $\sum odd$ -1 = $3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots$

Then :

$$1 \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p + 2^s * (\sum_{s/s} odd - 1)$$

$$+ 2^{2s} * (\sum_{s/s} odd - 1)$$

$$+ 2^s * 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$$

So we get :

$$1 \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p + 2^s * (\sum_{s/s} odd - 1) + 2^{2s} * (\sum_{s/s} odd - 1)$$

$$+ 2^s * 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$$

We repeat the same operation:

$$1 \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p + 2^s * (\sum_{s/s} odd - 1) + 2^{2s} * (\sum_{s/s} odd - 1)$$

$$+ 2^s * 2^s * 2^s * (3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots)$$

$$+ 2^s * 2^s * 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$$

Then:

$$1 \Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p + 2^s * (\sum_{s/s} odd - 1) + 2^{2s} * (\sum_{s/s} odd - 1)$$

$$+ 2^{3s} * (3+5+7+9+11+13+15+17+19+21+23+\ldots)$$

$$+ 2^s * 2^s * 2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+\ldots)$$

We have : $\sum_{s/s} odd$ -1 = $3^s+5^s+7^s+9^s+11^s+13^s+15^s+17^s+19^s+21^s+23^s+\ldots..$

Therefore:

1 $\Longleftrightarrow$ $\sum_{s/s} \boldsymbol{Even}$ = $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ + 2^s * ($\sum_{s/s} odd$ - 1) + 2^{2s} * ($\sum_{s/s} odd$ - 1)

+ 2^{3s} * ($\sum_{s/s} odd$ - 1)

+ 2^s *2^s *2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+…)

Then:

1 $\Longleftrightarrow$$\sum_{s/s} \boldsymbol{Even}$ =$\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ +2^s*($\sum_{s/s} odd$ - 1)+2^{2s}*($\sum_{s/s} odd$ - 1)+2^{3s}*($\sum_{s/s} odd$ - 1)

+ 2^s *2^s *2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+…)

We get as a result:

1 $\Longleftrightarrow$$\sum_{s/s} \boldsymbol{Even}$ =$\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ + (2^s + 2^{2s} + 2^{3s})*($\sum_{s/s} odd$ - 1)

+ 2^s *2^s *2^s * (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+…)

So we repeat the same operation until the infinity and we get as a result:

1 $\Longleftrightarrow$$\sum_{s/s} \boldsymbol{Even}$ = $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ + (2^s + 2^{2s} + 2^{3s} +2^{4s} + 2^{5s} +…..)*($\sum_{s/s} odd$ - 1)

+ (2^s *2^s *2^s *….) (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s+26^s+28s+30^s+34^s+…)

<u>Using theorem and notion 1 of Zero</u> , we get as a result:

2^s *2^s *2^s *…… = 0 $\Longrightarrow$ (2^s *2^s *2^s *…) (6^s+10^s+12^s+14^s+18^s+20^s+22^s+24^s…) = 0

Then:

1 $\Longleftrightarrow$$\sum_{s/s} \boldsymbol{Even}$ = $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ + (2^s + 2^{2s} + 2^{3s} +2^{4s} + 2^{5s} +…..)*($\sum_{s/s} odd$ - 1)

<u>Using Formula 5</u>, we have:

$\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ = 2^s + 2^{2s} + 2^{3s} +2^{4s} + 2^{5s} +….. = - 2^s /(2^s – 1)

Therefore the equation 1 will be:

1 $\Longleftrightarrow$$\sum_{s/s} \boldsymbol{Even}$ = $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ + $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ *($\sum_{s/s} odd$ - 1)

1 $\Longleftrightarrow$$\sum_{s/s} \boldsymbol{Even}$ = $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ + ($\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$ * $\sum_{s/s} odd$) - $\sum_{\substack{n=1 \\ s/s}}^{\infty} even.p$

1 $\Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p * \sum_{s/s} odd$

1 $\Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = - 2^s /(2^s – 1) * \sum_{s/s} odd$

1 $\Longleftrightarrow \sum_{s/s} \boldsymbol{Even} + 2^s /(2^s – 1) * \sum_{s/s} odd = 0$

<u>Using Method and Formula 134</u> , we have:

$Z'(S) = - 1 /(2^s – 1) * \sum_{s/s} odd$

$\sum_{s/s} odd = - (2^s – 1) * Z'(S)$

we substitute in the equation 1 and we get:

1 $\Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = - 2^s /(2^s – 1) * - (2^s – 1) * Z'(S)$

1 $\Longleftrightarrow \sum_{s/s} \boldsymbol{Even} = 2^s * Z'(S)$

Then:

1 $\Longleftrightarrow Z'(S) = 1/2^s * \sum_{s/s} \boldsymbol{Even}$

As conclusion we get:

1 $\Longleftrightarrow \boldsymbol{\sum_{s/s} Even = - 2^s /(2^s – 1) * \sum_{s/s} odd}$

$\boldsymbol{\sum_{s/s} Even + 2^s /(2^s – 1) * \sum_{s/s} odd = 0}$

$\boldsymbol{Z'(S) = 1/2^s * \sum_{s/s} Even}$

$\boldsymbol{\sum_{s/s} Even = 2^s * Z'(S)}$

This is Method and Formula 138

** Method and Formula 139: Relationship between the sum of reciprocals of even numbers that its exponent is a complex numbers S, and the sum of reciprocals of odd numbers that its exponent is a complex numbers S, and the relationship between the sum of reciprocals of even numbers that its exponent is a complex numbers S, and Zeta Z(S)

$\boxed{1}$ = $\sum_{s/s} \overline{\boldsymbol{Even}}$ = $1/2^s+1/4^s+1/6^s+1/8^s+1/10^s+1/12^s+1/14^s+1/16^s+1/18^s+1/20^s$

$+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/32^s+1/34^s+1/36^s+1/38^s$

$+1/40^s+1/42^s+1/44^s+1/46^s+1/48^s+1/50^s+1/52^s+1/54^s+1/56^s$

$+1/58^s +1/60^s+1/62^s+1/64^s+1/66^s+1/68^s+1/70^s+1/72^s$......

1 $\Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}}$ = $(1/2^s+1/4^s+1/8^s+1/16^s+1/32^s+1/64^s+1/128^s+1/512^s+1/1024^s+.....)$

$+(1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

We have :

$\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p}$ = $1/2^s+1/4^s+1/8^s+1/16^s+1/32^s+...$ = $1/2^s+1/2^{2s}+1/2^{3s}+1/2^{4s}+1/2^{5s}+...$

We substitute the left part of the equation and we get as a result:

1 $\Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p}$ $+(1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+.....)$

Then:

1 $\Longleftrightarrow$ $\sum_{s/s} \overline{\boldsymbol{Even}}$ $=\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p}$

$+ (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

1 $\Longleftrightarrow$ $\sum_{s/s} \overline{\boldsymbol{Even}}$ $=\sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p}$

$+1/2^s * (1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...)$

$+1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

We have : $\sum_{s/s} \overline{odd}$ = 1+1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...

Then : $\sum_{s/s} \overline{odd}$ -1 = 1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...

Let us substitute this value in the equation 1 , we get as a result :

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p}$$

$$+ 1/2^s * (\sum_{s/s} \overline{odd} - 1)$$

+1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + 1/2^s * (\sum_{s/s} \overline{odd} - 1)$$

+1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)

We repeat the same operation and we get :

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + 1/2^s * (\sum_{s/s} \overline{odd} - 1)$$

+ 1/2^s *1/2^s * (1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...)

+1/2^s * 1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)

We have: $\sum_{s/s} \overline{odd}$ -1 = 1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...

Therefore :

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + 1/2^s * (\sum_{s/s} \overline{odd} - 1)$$

+ 1/2^{2s} * (1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...)

+1/2^s * 1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)

We have: $\sum_{s/s} \overline{odd}$ -1 = 1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...

Then :

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + 1/2^s * (\sum_{s/s} \overline{odd} - 1)$$

$$+ 1/2^{2s} * (\sum_{s/s} \overline{odd} - 1)$$

+1/2^s * 1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)

So we get :

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} + 1/2^s * (\sum_{s/s} \overline{odd} - 1) + 1/2^{2s} * (\sum_{s/s} \overline{odd} - 1)$$

$+1/2^s * 1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

We repeat the same operation:

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} + 1/2^s * (\sum_{s/s} \overline{odd} - 1) + 1/2^{2s} * (\sum_{s/s} \overline{odd} - 1)$$

$+ 1/2^s *1/2^s * 1/2^s * (1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...)$

$+1/2^s*1/2^s*1/2* (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

Then:

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} + 2^s * (\sum_{s/s} \overline{odd} - 1) + 2^{2s} * (\sum_{s/s} \overline{odd} - 1)$$

$+ 1/2^{3s} * (1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...)$

$+1/2^s *1/2^s *1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

We have: $\sum_{s/s} \overline{odd}$ -1 = $1/3^s+1/5^s+1/7^s+1/9^s+1/11^s+1/13^s+1/15^s+1/17^s+1/19^s+1/21^s+1/23^s+...$

Therefore:

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} + 1/2^s * (\sum_{s/s} \overline{odd} - 1) + 1/2^{2s} * (\sum_{s/s} \overline{odd} - 1)$$

$$+ 1/2^{3s} * (\sum_{s/s} \overline{odd} - 1)$$

$+1/2^s *1/2^s *1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

Then:

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} +1/2^s*(\sum_{s/s} \overline{odd} - 1)+1/2^{2s}*(\sum_{s/s} \overline{odd} - 1)+1/2^{3s}*(\sum_{s/s} \overline{odd} - 1)$$

$+1/2^s *1/2^s *1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

We get as a result:

$$1 \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1\\ s/s}}^{\infty} \overline{even.p} + (1/2^s + 1/2^{2s} + 1/2^{3s})*(\sum_{s/s} \overline{odd} - 1)$$

$+1/2^s *1/2^s *1/2^s * (1/6^s+1/10^s+1/12^s+1/14^s+1/18^s+1/20^s+1/22^s+1/24^s+1/26^s+1/28^s+1/30^s+1/34^s+...)$

So we repeat the same operation until the infinity and we get as a result:

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + \ldots) * (\sum_{s/s} \overline{odd} - 1)$

$+ (1/2^s * 1/2^s * 1/2^s * \ldots)(1/6^s + 1/10^s + 1/12^s + 1/14^s + 1/18^s + 1/20^s + 1/22^s + 1/24^s + 1/26^s + 1/28^s + 1/30^s + 1/34^s + \ldots)$

Using theorem and notion 1 of Zero , we get as a result:

$1/2^s * 1/2^s * 1/2^s * \ldots = 0 \Longrightarrow (1/2^s * 1/2^s * 1/2^s * \ldots)(6^s + 10^s + 12^s + 14^s + 18^s + 20^s + 22^s + 24^s \ldots) = 0$

Then:

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + (1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + \ldots) * (\sum_{s/s} \overline{odd} - 1)$

Using Formula 7, we have:

$\sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} = 1/2^s + 1/2^{2s} + 1/2^{3s} + 1/2^{4s} + 1/2^{5s} + \ldots.. = 1/(2^s - 1)$

Therefore the equation 1 will be:

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} * (\sum_{s/s} \overline{odd} - 1)$

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} + (\sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} * \sum_{s/s} \overline{odd}) - \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p}$

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} * \sum_{s/s} \overline{odd}$

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = 1/(2^s - 1) * \sum_{s/s} \overline{odd}$

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} - 1/(2^s - 1) * \sum_{s/s} \overline{odd} = 0$

Using Method and Formula 135 , we have:

$Z(S) = 2^s/(2^s - 1) * \sum_{s/s} \overline{odd}$

$\sum_{s/s} \overline{odd} = (2^s - 1)/2^s * Z(S)$

we substitute in the equation 1 and we get:

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = 1/(2^s - 1) * (2^s - 1)/2^s * Z(S)$

$(1) \Longleftrightarrow \sum_{s/s} \overline{\boldsymbol{Even}} = 1/2^s * Z(S)$

Then:

$(1) \Longleftrightarrow Z(S) = 2^s * \sum_{s/s} \overline{\boldsymbol{Even}}$

As conclusion we get:

$$1 \Leftrightarrow \sum_{s/s} \overline{Even} = 1/(2^s - 1) * \sum_{s/s} \overline{odd}$$

$$\sum_{s/s} \overline{odd} = (2^s - 1) * \sum_{s/s} \overline{Even}$$

$$Z(S) = 2^s * \sum_{s/s} \overline{Even}$$

$$\sum_{s/s} \overline{Even} = 1/2^s * Z(S)$$

This is Method and Formula 139

** Formula 140:

We have: $Z(S) = 2^S * (\prod^{S-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S))$

Using Method and Formula 139 , we have:

$Z(S) = 2^S * \sum_{s/s} \overline{Even}$

Then:

$2^S * \sum_{s/s} \overline{Even} = 2^S * (\prod^{S-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S))$

$$\sum_{s/s} \overline{Even} = \prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S)$$

This is Formula 140

** Formula 141:

Using Formula 139 , we have:

$\sum_{s/s} \overline{odd} = (2^S - 1) * \sum_{s/s} \overline{Even}$

Using Formula 140 , we have:

$\sum_{s/s} \overline{Even} = \prod^{S-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S)$

So as a conclusion we get:

$$\sum_{s/s} \overline{odd} = (2^s - 1) * (\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S))$$

This is Formula 141

** Method and Formula 142: Relationship between the sum of natural numbers and the sum of its reciprocals, and the relationship among Z(1), Z(-1) and Z(0)

Using theorem and notion 2 of Zero and, we have:

$- 1 - (1/2^1+1/2^2 +1/2^3 +1/2^4 +1/2^5 +1/2^6 +1/2^7+....) = 2^1 +2^2 +2^3 +2^4 +2^5 +2^6 +2^7 +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/2^n = \sum_{n=-1}^{-\infty} 1/2^n$

And using theorem and notion 2 of Zero , we have:

$- 1 - (1/3^1+1/3^2 +1/3^3 +1/3^4 +1/3^5 +1/3^6 +1/3^7+....) = 3^1 +3^2 +3^3 +3^4 +3^5 +3^6 +3^7 +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/3^n = \sum_{n=-1}^{-\infty} 1/3^n$

And using theorem and notion 2 of Zero, we have:

$- 1 - (1/5^1+1/5^2 +1/5^3 +1/5^4 +1/5^5 +1/5^6 +1/5^7+....) = 5^1 +5^2 +5^3 +5^4 +5^5 +5^6 +5^7 +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/5^n = \sum_{n=-1}^{-\infty} 1/5^n$

And using theorem and notion 2 of Zero, we have:

$- 1 - (1/7^1+1/7^2 +1/7^3 +1/7^4 +1/7^5 +1/7^6 +1/7^7+....) = 7^1 +7^2 +7^3 +7^4 +7^5 +7^6 +7^7 +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/7^n = \sum_{n=-1}^{-\infty} 1/7^n$

And using theorem and notion 2 of Zero , we have:

$- 1 - (1/P^1+1/P^2 +1/P^3 +1/P^4 +1/P^5 +1/P^6 +1/P^7+....) = P^1 +P^2 +P^3 +P^4 +P^5 +P^6 +P^7 +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/P^n = \sum_{n=-1}^{-\infty} 1/P^n$

And using theorem and notion 2 of Zero , we have:

$- 1 - (1/6^1+1/6^2 +1/6^3 +1/6^4 +1/6^5 +1/6^6 +1/6^7+....) = 6^1 +6^2 +6^3 +6^4 +6^5 +6^6 +6^7 +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/6^n = \sum_{n=-1}^{-\infty} 1/6^n$

And using theorem and notion 2 of Zero , we have:

$- 1- (1/10^1+1/10^2 +1/10^3 +1/10^4 +1/10^5 +....) = 10^1 +10^2 +10^3 +10^4 +10^5 +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/10^n = \sum_{n=-1}^{-\infty} 1/10^n$

<u>And using theorem and notion 2 of Zero</u>, we have:

$$- 1- (1/12^1+1/12^2 +1/12^3 +1/12^4 +1/12^5 +....) = 12^1 +12^2 +12^3 +12^4 +12^5 +...$$

Then: $-1 - \sum_{n=1}^{+\infty} 1/12^n = \sum_{n=-1}^{-\infty} 1/12^n$

<u>And using theorem and notion 2 of Zero</u>, we have:

$$- 1 - (1/\prod p^1+1/\prod p^2 +1/\prod p^3 +1/\prod p^4 +1/\prod p^5 +....) = \prod p^1 +\prod p^2 +\prod p^3 +\prod p^4 +\prod p^5 +...$$

Then: $-1 - \sum_{n=1}^{+\infty} 1/(\prod p^{\,n}) = \sum_{n=-1}^{-\infty} 1/(\prod p^{\,n})$

Let us sum the whole parts , and we get as a result:

$$- 1 - (1/2^1+1/2^2 +1/2^3 +1/2^4 +1/2^5 +1/2^6 +1/2^7+....) = 2^1 +2^2 +2^3 +2^4 +2^5 +2^6 +2^7 +...$$

+

$$- 1 - (1/3^1+1/3^2 +1/3^3 +1/3^4 +1/3^5 +1/3^6 +1/3^7+....) = 3^1 +3^2 +3^3 +3^4 +3^5 +3^6 +3^7 +...$$

+

$$- 1 - (1/5^1+1/5^2 +1/5^3 +1/5^4 +1/5^5 +1/5^6 +1/5^7+....) = 5^1 +5^2 +5^3 +5^4 +5^5 +5^6 +5^7 +...$$

+

$$- 1 - (1/7^1+1/7^2 +1/7^3 +1/7^4 +1/7^5 +1/7^6 +1/7^7+....) = 7^1 +7^2 +7^3 +7^4 +7^5 +7^6 +7^7 +...$$

+

....

+

....

+

$$- 1 - (1/P^1+1/P^2 +1/P^3 +1/P^4 +1/P^5 +1/P^6 +1/P^7+....) = P^1 +P^2 +P^3 +P^4 +P^5 +P^6 +P^7 +...$$

+

$$- 1 - (1/6^1+1/6^2 +1/6^3 +1/6^4 +1/6^5 +1/6^6 +1/6^7+....) = 6^1 +6^2 +6^3 +6^4 +6^5 +6^6 +6^7 +...$$

+

$$- 1- (1/10^1+1/10^2 +1/10^3 +1/10^4 +1/10^5 +....) = 10^1 +10^2 +10^3 +10^4 +10^5 +...$$

+

$$- 1- (1/12^1+1/12^2 +1/12^3 +1/12^4 +1/12^5 +....) = 12^1 +12^2 +12^3 +12^4 +12^5 +...$$

+

....

+

....

+

$$- 1 - (1/\prod p^1+1/\prod p^2 +1/\prod p^3 +1/\prod p^4 +1/\prod p^5 +....) = \prod p^1 +\prod p^2 +\prod p^3 +\prod p^4 +\prod p^5 +...$$

$$= -Z(0) - \left(\sum_{m=1}^{+\infty} \frac{1}{2^m}\right) - \left(\sum_{p=3}^{+\infty}\left(\sum_{m=1}^{+\infty} \frac{1}{p^m}\right)\right) - \left(\sum_{(\prod p)=6}^{+\infty}\left(\sum_{m=1}^{+\infty} \frac{1}{(\prod p)^m}\right)\right) = \left(\sum_{m=-1}^{-\infty} \frac{1}{2^m}\right) + \left(\sum_{p=3}^{+\infty}\left(\sum_{-1}^{-\infty} \frac{1}{p^m}\right)\right) + \left(\sum_{(\prod p)=6}^{+\infty}\left(\sum_{m=-1}^{-\infty} \frac{1}{(\prod p)^m}\right)\right)$$

$\Longleftrightarrow$-Z(0) – $(\sum_{n=1}^{+\infty} 1/2^n)$ – $(\sum_{P=3}^{+\infty}(\sum_{n=1}^{+\infty} 1/P^n))$ – $(\sum_{\prod p=6}^{+\infty}(\sum_{n=1}^{+\infty} 1/\prod p^n))$
= $(\sum_{n=-1}^{-\infty} 1/2^n)$ – $(\sum_{P=3}^{+\infty}(\sum_{n=-1}^{-\infty} 1/P^n))$ – $(\sum_{\prod p=6}^{+\infty}(\sum_{n=-1}^{-\infty} 1/\prod p^n))$

Therefore:

- Z(0) – (1/2 +1/3 +1/4 +1/5 +1/6 +1/7 +……) = 2+3+4+5+6+7+…….

- Z(0) +$\sum_{n=1}^{\infty} even.p$ -$\sum_{n=1}^{\infty} even.p$ – (1/2 +1/3 +1/4 +1/5 +1/6 +1/7 +…) = 2+3+4+5+6+7+….

- Z(0) – $\sum_{n=1}^{\infty} even.p$ - (1+1/2 +1/3 +1/4 +1/5 +1/6 +1/7 +…) = 1+2+3+4+5+6+7+…

1 = 2 - Z(0) – (1+1/2 +1/3 +1/4 +1/5 +1/6 +1/7 +…) = 1+2+3+4+5+6+7+…

We have: Z(1) = 1+1/2 +1/3 +1/4 +1/5 +1/6 +1/7 +…)

We have: Z(-1) = 1+2+3+4+5+6+7+…

1 $\Longleftrightarrow$ 2 - Z(0) - Z(1) = Z(-1)

Let us use this formula that we are going to prove later on:

Z(0) = 2 - $\prod^2/6$

We are going to substitute Z(0) by its value, so we get as a result:

1 $\Longleftrightarrow$ 2 - (2 - $\prod^2$/6) - Z(1) = Z(-1)

1 $\Longleftrightarrow$ $\prod^2$/6 - Z(1) = Z(-1)

1 $\Longleftrightarrow$ **Z(1)+ Z(-1) = $\prod^2/6$**

1 $\Longleftrightarrow$ **Z(1)+ Z(-1) - $\prod^2/6$ = 0**

1 $\Longleftrightarrow$ **Z(1)+ Z'(1) = $\prod^2/6$**

This is Method and Formula 142

** Method and Formula 143:Relationship between Zeta Z(S) and Zeta Prime Z'(S)

Using theorem and notion 2 of Zero, we have:

$- 1 - (1/2^{s}+1/2^{2s} +1/2^{3s} +1/2^{4s} +1/2^{5s} +....) = 2^{s} +2^{2s} +2^{3s} +2^{4s} +2^{5s} +2^{6s} +2^{7s} +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/2^{ns} = \sum_{n=-1}^{-\infty} 1/2^{ns}$

And using theorem and notion 2 of Zero, we have:

$- 1 - (1/3^{s}+1/3^{2s} +1/3^{3s} +1/3^{4s} +1/3^{5s} +....) = 3^{s} +3^{2s} +3^{3s} +3^{4s} +3^{5s} +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/3^{ns} = \sum_{n=-1}^{-\infty} 1/3^{ns}$

And using theorem and notion 2 of Zero, we have:

$- 1 - (1/5^{s}+1/5^{2s} +1/5^{3s} +1/5^{4s} +1/5^{5s} +....) = 5^{s} +5^{2s} +5^{3s} +5^{4s} +5^{5s} +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/5^{ns} = \sum_{n=-1}^{-\infty} 1/5^{ns}$

And using theorem and notion 2 of Zero, we have:

$- 1 - (1/7^{s}+1/7^{2s} +1/7^{3s} +1/7^{4s} +1/7^{5s} +....) = 7^{s} +7^{2s} +7^{3s} +7^{4s} +7^{5s} +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/7^{ns} = \sum_{n=-1}^{-\infty} 1/7^{ns}$

And using theorem and notion 2 of Zero, we have:

$- 1 - (1/P^{s}+1/P^{2s} +1/P^{3s} +1/P^{4s} +1/P^{5s} +....) = P^{s} +P^{2s} +P^{3s} +P^{4s} +P^{5s} +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/P^{ns} = \sum_{n=-1}^{-\infty} 1/P^{ns}$

And using theorem and notion 2 of Zero, we have:

$- 1 - (1/6^{s}+1/6^{2s} +1/6^{3s} +1/6^{4s} +1/6^{5s} +....) = 6^{s} +6^{2s} +6^{3s} +6^{4s} +6^{5s} +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/6^{ns} = \sum_{n=-1}^{-\infty} 1/6^{ns}$

And using theorem and notion 2 of Zero, we have:

$- 1- (1/10^{s}+1/10^{2s} +1/10^{3s} +1/10^{4s} +1/10^{5s} +....) = 10^{s} +10^{2s} +10^{3s} +10^{4s} +10^{5s} +...$

Then: $-1 - \sum_{n=1}^{+\infty} 1/10^{ns} = \sum_{n=-1}^{-\infty} 1/10^{ns}$

<u>And using theorem and notion 2 of Zero</u>, we have:

$$-1-(1/12^{s}+1/12^{2s}+1/12^{3s}+1/12^{4s}+1/12^{5s}+....) = 12^{s}+12^{2s}+12^{3s}+12^{4s}+12^{5s}+...$$

Then: $-1-\sum_{n=1}^{+\infty} 1/12^{ns} = \sum_{n=-1}^{-\infty} 1/12^{ns}$

<u>And using theorem and notion 2 of Zero</u>, we have:

$$-1-(1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+....) = \prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+...$$

Then: $-1-\sum_{n=1}^{+\infty} 1/(\prod p^{\,ns}) = \sum_{n=-1}^{-\infty} 1/(\prod p^{\,ns})$

Let us sum the whole parts , and we get as a result:

$$-1-(1/2^{s}+1/2^{2s}+1/2^{3s}+1/2^{4s}+1/2^{5s}+....) = 2^{s}+2^{2s}+2^{3s}+2^{4s}+2^{5s}+...$$

+

$$-1-(1/3^{s}+1/3^{2s}+1/3^{3s}+1/3^{4s}+1/3^{5s}+....) = 3^{s}+3^{2s}+3^{3s}+3^{4s}+3^{5s}+...$$

+

$$-1-(1/5^{s}+1/5^{2s}+1/5^{3s}+1/5^{4s}+1/5^{5s}+....) = 5^{s}+5^{2s}+5^{3s}+5^{4s}+5^{5s}+...$$

+

$$-1-(1/7^{s}+1/7^{2s}+1/7^{3s}+1/7^{4s}+1/7^{5s}+....) = 7^{s}+7^{2s}+7^{3s}+7^{4s}+7^{5s}+...$$

+

....

+

....

+

$$-1-(1/P^{s}+1/P^{2s}+1/P^{3s}+1/P^{4s}+1/P^{5s}+....) = P^{s}+P^{2s}+P^{3s}+P^{4s}+P^{5s}+...$$

+

$$-1-(1/6^{s}+1/6^{2s}+1/6^{3s}+1/6^{4s}+1/6^{5s}+....) = 6^{s}+6^{2s}+6^{3s}+6^{4s}+6^{5s}+...$$

+

$$-1-(1/10^{s}+1/10^{2s}+1/10^{3s}+1/10^{4s}+1/10^{5s}+....) = 10^{s}+10^{2s}+10^{3s}+10^{4s}+10^{5s}+...$$

+

$$-1-(1/12^{s}+1/12^{2s}+1/12^{3s}+1/12^{4s}+1/12^{5s}+....) = 12^{s}+12^{2s}+12^{3s}+12^{4s}+12^{5s}+...$$

+

....

+

....

+

$$-1-(1/\prod p^{s}+1/\prod p^{2s}+1/\prod p^{3s}+1/\prod p^{4s}+1/\prod p^{5s}+....) = \prod p^{s}+\prod p^{2s}+\prod p^{3s}+\prod p^{4s}+\prod p^{5s}+...$$

$$-Z(0)-\left(\sum_{n=1}^{+\infty}\frac{1}{2^{ns}}\right)-\left(\sum_{p=3}^{+\infty}\left(\sum_{n=1}^{+\infty}\frac{1}{p^{ns}}\right)\right)-\left(\sum_{(\prod p)=6}^{+\infty}\left(\sum_{n=1}^{+\infty}\frac{1}{(\prod p)^{ns}}\right)\right)=\left(\sum_{n=-1}^{-\infty}\frac{1}{2^{ns}}\right)+\left(\sum_{p=3}^{+\infty}\left(\sum_{n=-1}^{-\infty}\frac{1}{p^{ns}}\right)\right)+\left(\sum_{(\prod p)=6}^{+\infty}\left(\sum_{n=-1}^{-\infty}\frac{1}{(\prod p)^{ns}}\right)\right)$$

$\Longleftrightarrow$-Z(0) – ($\sum_{n=1}^{+\infty} 1/2^{ns}$) – ($\sum_{P=3}^{+\infty}(\sum_{n=1}^{+\infty} 1/P^{ns})$) – ($\sum_{\prod p=6}^{+\infty}(\sum_{n=1}^{+\infty} 1/\prod p^{ns})$)
= ($\sum_{n=-1}^{-\infty} 1/2^{ns}$) – ($\sum_{P=3}^{+\infty}(\sum_{n=-1}^{-\infty} 1/P^{ns})$) – ($\sum_{\prod p=6}^{+\infty}(\sum_{n=-1}^{-\infty} 1/\prod p^{ns})$)

Therefore:

$- Z(0) - (1/2^s + 1/3^s + 1/4^s + 1/5^s + 1/6^s + 1/7^s + \ldots\ldots) = 2^s+3^s+4^s+5^s+6^s+7^s+\ldots\ldots.$

$- Z(0)+\sum_{n=1}^{\infty} even.p - \sum_{n=1}^{\infty} even.p - (1/2^s + 1/3^s + 1/4^s + 1/5^s + \ldots) = 2^s+3^s+4^s+5^s+\ldots$

$- Z(0) - \sum_{n=1}^{\infty} even.p - (1+1/2^s + 1/3^s + 1/4^s + 1/5^s + \ldots) = 1+2^s+3^s+4^s+5^s+\ldots$

1 $= 2 - Z(0) - (1+1/2^s + 1/3^s + 1/4^s + 1/5^s + \ldots) = 1+2^s+3^s+4^s+5^s+\ldots$

We have: $Z(S) = 1+1/2^s + 1/3^s + 1/4^s + 1/5^s + 1/6^s + 1/7^s + \ldots$

We have: $Z'(S) = Z(-S) = 1+2^s+3^s+4^s+5^s+6^s+7^s + \ldots$

1 $\Longleftrightarrow$ $2 - Z(0) - Z(S) = Z(-S)$

Let us use this formula that we are going to prove later on:

$Z(0) = 2 - \prod^2/6$

We are going to substitute Z(0) by its value, so we get as a result:

1 $\Longleftrightarrow$ $2 - (2 - \prod^2/6) - Z(S) = Z(-S)$

1 $\Longleftrightarrow$ $\prod^2/6 - Z(S) = Z(-S)$

1 $\Longleftrightarrow$ $\mathbf{Z(S)+ Z(-S) = \prod^2/6}$

1 $\Longleftrightarrow$ $\mathbf{Z(S)+ Z(-S) - \prod^2/6 = 0}$

1 $\Longleftrightarrow$ $\mathbf{Z(S)+ Z'(S) = \prod^2/6}$

This is Method and Formula 143:

** Method and Formula 144 : the value of Z(0) and the value of log(0)

Using theorem and notion 2 of Zero, and using Formula 69 and Formula 71, we have:

$- 1- (1/2^2 +1/2^4 +1/2^6 +1/2^8 +1/2^{10} + ...) = 2^2 +2^4 +2^6 +2^8 +2^{10} +...$

Using theorem and notion 2 of Zero, and using Formula 89 and Formula 91, we have:

$- 1- (1/P^2 +1/P^4 +1/P^6 +1/P^8 +1/P^{10} + ...) = P^2 +P^4 +P^6 +P^8 +P^{10} +...$

Then we have:

$- 1- (1/3^2 +1/3^4 +1/3^6 +1/3^8 +1/3^{10} + ...) = 3^2 +3^4 +3^6 +3^8 +3^{10} +...$

And we have:

$- 1- (1/5^2 +1/5^4 +1/5^6 +1/5^8 +1/5^{10} + ...) = 5^2 +5^4 +5^6 +5^8 +5^{10} +...$

And we have also:

$- 1- (1/7^2 +1/7^4 +1/7^6 +1/7^8 +1/7^{10} + ...) = 7^2 +7^4 +7^6 +7^8 +7^{10} +...$

This is what happens for all prime numbers:

Using theorem and notion 2 of Zero, and using Formula 109 and Formula 111, we have:

$- 1 - (1/\prod p^2 +1/\prod p^4 +1/\prod p^6 +1/\prod p^8 +1/\prod p^{10} ...) = \prod p^2 +\prod p^3 +\prod p^4 +\prod p^6 +\prod p^8 +\prod p^{10} +...$

Then we have:

$- 1- (1/6^2 +1/6^4 +1/6^6 +1/6^8 +1/6^{10} + ...) = 6^2 +6^4 +6^6 +6^8 +6^{10} +...$

And we have:

$- 1- (1/10^2 +1/10^4 +1/10^6 +1/10^8 +1/10^{10} + ...) = 10^2 +10^4 +10^6 +10^8 +10^{10} +...$

And we have also:

$- 1- (1/12^2 +1/12^4 +1/12^6 +1/12^8 +1/12^{10} + ...) = 12^2 +12^4 +12^6 +12^8 +12^{10} +...$

This is what happens for all products of prime numbers:

So as a conclusion:

We have:

$$- 1- (1/2^2 +1/2^4 +1/2^6 +1/2^8 +1/2^{10} + ...) = 2^2 +2^4 +2^6 +2^8 +2^{10} +...$$

And $$- 1- (1/3^2 +1/3^4 +1/3^6 +1/3^8 +1/3^{10} + ...) = 3^2 +3^4 +3^6 +3^8 +3^{10} +...$$

And $$- 1- (1/5^2 +1/5^4 +1/5^6 +1/5^8 +1/5^{10} + ...) = 5^2 +5^4 +5^6 +5^8 +5^{10} +...$$

And $$- 1- (1/7^2 +1/7^4 +1/7^6 +1/7^8 +1/7^{10} + ...) = 7^2 +7^4 +7^6 +7^8 +7^{10} +...$$

And ....

And ....

And ....

And $$- 1- (1/P^2 +1/P^4 +1/P^6 +1/P^8 +1/P^{10} + ...) = P^2 +P^4 +P^6 +P^8 +P^{10} +...$$

And we have:

$$- 1- (1/6^2 +1/6^4 +1/6^6 +1/6^8 +1/6^{10} + ...) = 6^2 +6^4 +6^6 +6^8 +6^{10} +...$$

$$- 1- (1/10^2 +1/10^4 +1/10^6 +1/10^8 +1/10^{10} + ...) = 10^2 +10^4 +10^6 +10^8 +10^{10} +...$$

$$- 1- (1/12^2 +1/12^4 +1/12^6 +1/12^8 +1/12^{10} + ...) = 12^2 +12^4 +12^6 +12^8 +12^{10} +...$$

And ....

And ....

And ....

And $$- 1 - (1/\prod p^2 +1/\prod p^4 +1/\prod p^6 +1/\prod p^8 +1/\prod p^{10} ...) = \prod p^2 +\prod p^3 +\prod p^4 +\prod p^6 +\prod p^8 +\prod p^{10} +...$$

We can see that:

We have: $- 1- (1/2^2 +1/2^4 +1/2^6 +1/2^8 +1/2^{10} + ...) = 2^2 +2^4 +2^6 +2^8 +2^{10} +...$

Then: $- 1- (1/2^2 +1/(2^2)^2 +1/(2^3)^2 +1/(2^4)^2 +1/(2^5)^2 +...)=2^2 +(2^2)^2 +(2^3)^2 +(2^4)^2 +(2^5)^2 +...$

Therefore: $- 1- (1/2^2 +1/4^2 +1/8^2 +1/16^2 +1/32^2 + ...) = 2^2 +4^2 +8^2 +16^2 +32^2 +...$

We have: $- 1- (1/3^2 +1/3^4 +1/3^6 +1/3^8 +1/3^{10} + ...) = 3^2 +3^4 +3^6 +3^8 +3^{10} +...$

Then: $- 1- (1/3^2 +1/(3^2)^2 +1/(3^3)^2 +1/(3^4)^2 +1/(3^5)^2 +...)=3^2 +(3^2)^2 +(3^3)^2 +(3^4)^2 +(3^5)^2 +...$

Therefore: $- 1- (1/3^2 +1/9^2 +1/27^2 +1/81^2 +1/243^2 + ...) = 3^2 +9^2 +27^2 +81^2 +243^2 +...$

We have: $- 1- (1/5^2 +1/5^4 +1/5^6 +1/5^8 +1/5^{10} + ...) = 5^2 +5^4 +5^6 +5^8 +5^{10} +...$

Then: $- 1- (1/5^2 +1/(5^2)^2 +1/(5^3)^2 +1/(5^4)^2 +1/(5^5)^2 +...)=5^2 +(5^2)^2 +(5^3)^2 +(5^4)^2 +(5^5)^2 +...$

Therefore: $- 1- (1/5^2 +1/25^2 +1/125^2 +1/625^2 +1/3125^2 + ...) = 5^2 +25^2 +125^2 +625^2 +3125^2 +...$

We have: $- 1- (1/7^2 +1/7^4 +1/7^6 +1/7^8 +1/7^{10} + ...) = 7^2 +7^4 +7^6 +7^8 +7^{10} +...$

Then: $- 1- (1/7^2 +1/(7^2)^2 +1/(7^3)^2 +1/(7^4)^2 +1/(7^5)^2 +...)=7^2 +(7^2)^2 +(7^3)^2 +(7^4)^2 +(7^5)^2 +...$

Therefore: $- 1-(1/7^2 +1/49^2 +1/343^2 +1/2401^2 +1/16807^2 + ..) = 7^2 +49^2 +343^2 +2401^2 +16807^2 +...$

……….

……….

……….

……….

……….

We have: $-1-(1/P^2+1/P^4+1/P^6+1/P^8+1/P^{10}+\ldots.) = P^2+P^4+P^6+P^8+P^{10}+\ldots$

Then: $-1-(1/P^2+1/(P^2)^2+1/(P^3)^2+1/(P^4)^2+1/(P^5)^2+\ldots)=P^2+(P^2)^2+(P^3)^2+(P^4)^2+(P^5)^2+\ldots$

We have: $-1-(1/6^2+1/6^4+1/6^6+1/6^8+1/6^{10}+\ldots.) = 6^2+6^4+6^6+6^8+6^{10}+\ldots$

Then: $-1-(1/6^2+1/(6^2)^2+1/(6^3)^2+1/(6^4)^2+1/(6^5)^2+\ldots)=6^2+(6^2)^2+(6^3)^2+(6^4)^2+(6^5)^2+\ldots$

Therefore: $-1-(1/6^2+1/36^2+1/216^2+1/1296^2+1/7776^2+..) = 6^2+36^2+216^2+1296^2+7776^2+\ldots$

We have: $-1-(1/10^2+1/10^4+1/10^6+1/10^8+1/10^{10}+\ldots) = 10^2+10^4+10^6+10^8+10^{10}+\ldots$

Then: $-1-(1/10^2+1/(10^2)^2+1/(10^3)^2+1/(10^4)^2+1/(10^5)^2+..)=10^2+(10^2)^2+(10^3)^2+(10^4)^2+(10^5)^2+..$

Therefore: $-1-(1/10^2+1/100^2+1/1000^2+1/10000^2+1/100000^2+..) = 10^2+100^2+1000^2+10000^2+100000^2+\ldots$

We have: $-1-(1/12^2+1/12^4+1/12^6+1/12^8+1/12^{10}+\ldots) = 12^2+12^4+12^6+12^8+12^{10}+\ldots$

Then: $-1-(1/12^2+1/(12^2)^2+1/(12^3)^2+1/(12^4)^2+1/(12^5)^2+..)=12^2+(12^2)^2+(12^3)^2+(12^4)^2+(12^5)^2+..$

Therefore: $-1-(1/12^2+1/144^2+1/1728^2+1/20736^2+1/248832^2+..) = 12^2+144^2+1728^2+20736^2+248832^2+\ldots$

We have: $-1-(1/\prod p^2+1/\prod p^4+1/\prod p^6+1/\prod p^8+1/\prod p^{10}+\ldots) = \prod p^2+\prod p^4+\prod p^6+\prod p^8+\prod p^{10}+\ldots$

Then: $-1-(1/\prod p^2+1/(\prod p^2)^2+1/(\prod p^3)^2+1/(\prod p^4)^2+1/(\prod p^5)^2+..)=\prod p^2+(\prod p^2)^2+(\prod p^3)^2+(\prod p^4)^2+(\prod p^5)^2+..$

Let us sum the whole parts, and we get as a result:

$- 1- (1/2^2 +1/4^2 +1/8^2 +1/16^2 +1/32^2 + ...) = 2^2 +4^2 +8^2 +16^2 +32^2 +...$

+

$- 1- (1/3^2 +1/9^2 +1/27^2 +1/81^2 +1/243^2 + ...) = 3^2 +9^2 +27^2 +81^2 +243^2 +...$

+

$- 1- (1/5^2 +1/25^2 +1/125^2 +1/625^2 +1/3125^2 + ...) = 5^2 +25^2 +125^2 +625^2 +3125^2 +...$

+

$- 1-(1/7^2 +1/49^2 +1/343^2 +1/2401^2 +1/16807^2 + ..) = 7^2 +49^2 +343^2 +2401^2 +16807^2 +...$

+

....

+

....

+

$- 1- (1/P^2 +1/(P^2)^2 +1/(P^3)^2 +1/(P^4)^2 +1/(P^5)^2 +...)=P^2 +(P^2)^2 +(P^3)^2 +(P^4)^2 +(P^5)^2 +...$

+

$- 1-(1/6^2 +1/36^2 +1/216^2 +1/1296^2 +1/7776^2 + ..) = 6^2 +36^2 +216^2 +1296^2 +7776^2 +...$

+

$- 1-(1/10^2 +1/100^2 +1/1000^2 +1/10000^2 +1/100000^2 + ..) = 10^2 +100^2 +1000^2 +10000^2 +100000^2 +...$

+

$- 1-(1/12^2 +1/144^2 +1/1728^2 +1/20736^2 +1/248832^2 + ..) = 12^2 +144^2 +1728^2 +20736^2 +248832^2 +...$

+

....

+

....

+

$- 1- (1/\prod p^2+1/(\prod p^2)^2 +1/(\prod p^3)^2+1/(\prod p^4)^2 +1/(\prod p^5)^2 +..)=\prod p^2 +(\prod p^2)^2 +(\prod p^3)^2 +(\prod p^4)^2 +(\prod p^5)^2 +..$

---

1 $=- (1+1+1+1+...) - (1/2^2+1/3^2+1/4^2+1/5^2+1/6^2+1/7^2+...) = 2^2+3^2+4^2+5^2+6^2+7^2+...$

$=- Z(0) - (1/2^2+1/3^2+1/4^2+1/5^2+1/6^2+1/7^2+...) = 2^2+3^2+4^2+5^2+6^2+7^2+...$

$=- Z(0)+ \sum_{n=1}^{\infty} even.p - \sum_{n=1}^{\infty} even.p - (1/2^2+1/3^2+1/4^2+1/5^2+1/6^2+1/7^2+...) = 2^2+3^2+4^2+5^2+6^2+7^2+...$

$= - Z(0) - \sum_{n=1}^{\infty} even.p - (1+1/2^2+1/3^2+1/4^2+1/5^2+1/6^2+1/7^2+...) = 1+2^2+3^2+4^2+5^2+6^2+7^2+...$

We have: $1+2^2+3^2+4^2+5^2+6^2+7^2+... = Z(-2) = 0$

Then the equation 1 will be: $- Z(0) - \sum_{n=1}^{\infty} even.p - (1+1/2^2+1/3^2+1/4^2+1/5^2+1/6^2+1/7^2+...) = 0$

We have: $1+1/2^2+1/3^2+1/4^2+1/5^2+1/6^2+1/7^2+... = Z(2) =\prod^2/6$

Then the equation 1 will be: - Z(0) - $\sum_{n=1}^{\infty} even.p$ - ∏^{2}/6 = 0

We have: Z(0) = - $\sum_{n=1}^{\infty} even.p$ - ∏^{2}/6

We have: $\sum_{n=1}^{\infty} even.p$ = - 2

Then: Z(0) = 2 - ∏^{2}/6

As a conclusion we get:

Log (0) = Z(0) = 2 - ∏²/6

Log (0) = Z(0) =1+1+1+1+1+……. = 2 - (∏²/6) ≈ 0,356733333

This is Method and Formula 144

** Method and Formula 145: Relationship between Zeta Z(2S) and Z(-2S)

Using theorem and notion 2 of Zero, **and using Formula 79 and Formula 81,**we have:

$- 1- (1/2^{2s} +1/2^{4s} +1/2^{6s} +1/2^{8s} +1/2^{10s} + ...) = 2^{2s} +2^{4s} +2^{6s} +2^{8s} +2^{10s} +...$

Using theorem and notion 2 of Zero, **and using Formula 99 and using Formula 101,** we have:

$- 1- (1/P^{2s} +1/P^{4s} +1/P^{6s} +1/P^{8s} +1/P^{10s} + ...) = P^{2s} +P^{4s} +P^{6s} +P^{8s} +P^{10s} +...$

Then we have:

$- 1- (1/3^{2s} +1/3^{4s} +1/3^{6s} +1/3^{8s} +1/3^{10s} + ...) = 3^{2s} +3^{4s} +3^{6s} +3^{8s} +3^{10s} +...$

And we have:

$- 1- (1/5^{2s} +1/5^{4s} +1/5^{6s} +1/5^{8s} +1/5^{10s} + ...) = 5^{2s} +5^{4s} +5^{6s} +5^{8s} +5^{10s} +...$

And we have also:

$- 1- (1/7^{2s} +1/7^{4s} +1/7^{6s} +1/7^{8s} +1/7^{10s} + ...) = 7^{2s} +7^{4s} +7^{6s} +7^{8s} +7^{10s} +...$

This is what happens for all prime numbers that its exponent is a complex number S:

Using theorem and notion 2 of Zero, **and using Formula 119 and Formula 121,** we have:

$- 1 - (1/\prod p^{2s} +1/\prod p^{4s} +1/\prod p^{6s} +1/\prod p^{8s} +1/\prod p^{10s} ...) = \prod p^{2s} +\prod p^{3s} +\prod p^{4s} +\prod p^{6s} +\prod p^{8s} +\prod p^{10s} +...$

Then we have:

$- 1- (1/6^{2s} +1/6^{4s} +1/6^{6s} +1/6^{8s} +1/6^{10s} + ...) = 6^{2s} +6^{4s} +6^{6s} +6^{8s} +6^{10s} +...$

And we have:

$- 1- (1/10^{2s} +1/10^{4s} +1/10^{6s} +1/10^{8s} +1/10^{10s} + ...) = 10^{2s} +10^{4s} +10^{6s} +10^{8s} +10^{10s} +...$

And we have also:

$- 1- (1/12^{2s} +1/12^{4s} +1/12^{6s} +1/12^{8s} +1/12^{10s} + ...) = 12^{2s} +12^{4s} +12^{6s} +12^{8s} +12^{10s} +...$

This is what happens for all products of prime numbers that its exponent is a complex number S:

So as a conclusion:

We have:

$$- 1- (1/2^{2s} +1/2^{4s} +1/2^{6s} +1/2^{8s} +1/2^{10s} + ...) = 2^{2s} +2^{4s} +2^{6s} +2^{8s} +2^{10s} +...$$

And $- 1- (1/3^{2s} +1/3^{4s} +1/3^{6s} +1/3^{8s} +1/3^{10s} + ...) = 3^{2s} +3^{4s} +3^{6s} +3^{8s} +3^{10s} +...$

And $- 1- (1/5^{2s} +1/5^{4s} +1/5^{6s} +1/5^{8s} +1/5^{10s} + ...) = 5^{2s} +5^{4s} +5^{6s} +5^{8s} +5^{10s} +...$

And $- 1- (1/7^{2s} +1/7^{4s} +1/7^{6s} +1/7^{8s} +1/7^{10s} + ...) = 7^{2s} +7^{4s} +7^{6s} +7^{8s} +7^{10s} +...$

And ………………………………………………………………………………………………………

And ………………………………………………………………………………………………………

And ………………………………………………………………………………………………………

And $- 1- (1/P^{2s} +1/P^{4s} +1/P^{6s} +1/P^{8s} +1/P^{10s} + ...) = P^{2s} +P^{4s} +P^{6s} +P^{8s} +P^{10s} +...$

And we have:

$$- 1- (1/6^{2s} +1/6^{4s} +1/6^{6s} +1/6^{8s} +1/6^{10s} + ...) = 6^{2s} +6^{4s} +6^{6s} +6^{8s} +6^{10s} +...$$

$$- 1- (1/10^{2s} +1/10^{4s} +1/10^{6s} +1/10^{8s} +1/10^{10s} + ...) = 10^{2s} +10^{4s} +10^{6s} +10^{8s} +10^{10s} +...$$

$$- 1- (1/12^{2s} +1/12^{4s} +1/12^{6s} +1/12^{8s} +1/12^{10s} + ...) = 12^{2s} +12^{4s} +12^{6s} +12^{8s} +12^{10s} +...$$

And ………………………………………………………………………………………………………

And ………………………………………………………………………………………………………

And ………………………………………………………………………………………………………

And $- 1 - (1/\prod p^{2s} +1/\prod p^{4s}/\prod p^{6s} +1/\prod p^{8s} +1/\prod p^{10s}+..) =\prod p^{2s} +\prod p^{3s} +\prod p^{4s} +\prod p^{6s} +\prod p^{8s} +\prod p^{10s} +..$

We can see that:

We have: $- 1- (1/2^{2s} +1/2^{4s} +1/2^{6s} +1/2^{8s} +1/2^{10s} + ...) = 2^{2s} +2^{4s} +2^{6s} +2^{8s} +2^{10s} +...$

Then: $- 1- (1/2^{2s} +1/(2^{2s})^2 +1/(2^{3s})^2 +1/(2^{4s})^2 +1/(2^{5s})^2 +...)=2^{2s} +(2^{2s})^2 +(2^{3s})^2 +(2^{4s})^2 +(2^{5s})^2 +...$

Therefore: $- 1- (1/2^{2s} +1/4^{2s} +1/8^{2s} +1/16^{2s} +1/32^{2s} + ...) = 2^{2s} +4^{2s} +8^{2s} +16^{2s} +32^{2s} +...$

We have: $- 1- (1/3^{2s} +1/3^{4s} +1/3^{6s} +1/3^{8s} +1/3^{10s} + ...) = 3^{2s} +3^{4s} +3^{6s} +3^{8s} +3^{10s} +...$

Then: $- 1- (1/3^{2s} +1/(3^{2s})^2 +1/(3^{3s})^2 +1/(3^{4s})^2 +1/(3^{5s})^2 +...)=3^{2s} +(3^{2s})^2 +(3^{3s})^2 +(3^{4s})^2 +(3^{5s})^2 +...$

Therefore: $- 1- (1/3^{2s} +1/9^{2s} +1/27^{2s} +1/81^{2s} +1/243^{2s} + ...) = 3^{2s} +9^{2s} +27^{2s} +81^{2s} +243^{2s} +...$

We have: $- 1- (1/5^{2s} +1/5^{4s} +1/5^{6s} +1/5^{8s} +1/5^{10s} + ...) = 5^{2s} +5^{4s} +5^{6s} +5^{8s} +5^{10s} +...$

Then: $- 1- (1/5^{2s} +1/(5^{2s})^2 +1/(5^{3s})^2 +1/(5^{4s})^2 +1/(5^{5s})^2 +...)=5^{2s} +(5^{2s})^2 +(5^{3s})^2 +(5^{4s})^2 +(5^{5s})^2 +...$

Therefore: $- 1- (1/5^{2s} +1/25^{2s} +1/125^{2s} +1/625^{2s} +1/3125^{2s} + ...) = 5^{2s} +25^{2s} +125^{2s} +625^{2s} +3125^{2s} +...$

We have: $- 1- (1/7^{2s} +1/7^{4s} +1/7^{6s} +1/7^{8s} +1/7^{10s} + ...) = 7^{2s} +7^{4s} +7^{6s} +7^{8s} +7^{10s} +...$

Then: $- 1- (1/7^{2s} +1/(7^{2s})^2 +1/(7^{3s})^2 +1/(7^{4s})^2 +1/(7^{5s})^2 +...)=7^{2s} +(7^{2s})^2 +(7^{3s})^2 +(7^{4s})^2 +(7^{5s})^2 +...$

Therefore: $- 1-(1/7^{2s} +1/49^{2s} +1/343^{2s} +1/2401^{2s} +1/16807^{2s} + ..) = 7^{2s} +49^{2s} +343^{2s} +2401^{2s} +16807^{2s} +...$

…….

…….

…….

…….

…….

We have: $- 1- (1/P^{2s} +1/P^{4s} +1/P^{6s} +1/P^{8s} +1/P^{10s} + ...) = P^{2s} +P^{4s} +P^{6s} +P^{8s} +P^{10s} +...$

Then: $- 1- (1/P^{2s} +1/(P^{2s})^2 +1/(P^{3s})^2 +1/(P^{4s})^2 +1/(P^{5s})^2 +...)=P^{2s} +(P^{2s})^2 +(P^{3s})^2 +(P^{4s})^2 +(P^{5s})^2 +...$

We have: $- 1- (1/6^{2s} +1/6^{4s} +1/6^{6s} +1/6^{8s} +1/6^{10s} + ...) = 6^{2s} +6^{4s} +6^{6s} +6^{8s} +6^{10s} +...$

Then: $- 1- (1/6^{2s} +1/(6^{2s})^2 +1/(6^{3s})^2 +1/(6^{4s})^2 +1/(6^{5s})^2 +...)=6^{2s} +(6^{2s})^2 +(6^{3s})^2 +(6^{4s})^2 +(6^{5s})^2 +...$

Therefore: $- 1-(1/6^{2s}+1/36^{2s} +1/216^{2s} +1/1296^{2s} +1/7776^{2s} + ..) = 6^{2s} +36^{2s} +216^{2s} +1296^{2s} +7776^{2s} +...$

We have: $-1-(1/10^{2s}+1/10^{4s}+1/10^{6s}+1/10^{8s}+1/10^{10s}+...)=10^{2s}+10^{4s}+10^{6s}+10^{8s}+10^{10s} +...$

Then: $- 1- (1/10^{2s} +1/(10^{2s})^2 +1/(10^{3s})^2 +1/(10^{4s})^2 +1/(10^{5s})^2 +..)=10^{2s} +(10^{2s})^2 +(10^{3s})^2 +(10^{4s})^2 +(10^{5s})^2 +..$

Therefore: $- 1-(1/10^{2s}+1/100^{2s}+1/1000^{2s}+1/10000^{2s}+1/100000^{2s}+..) =10^{2s} +100^{2s} +1000^{2s} +10000^{2s} +100000^{2s}+..$

We have: $-1-(1/12^{2s}+1/12^{4s}+1/12^{6s}+1/12^{8s}+1/12^{10s}+...) = 12^{2s}+12^{4s}+12^{6s}+12^{8s}+12^{10s}+...$

Then: $- 1- (1/12^{2s} +1/(12^{2s})^2 +1/(12^{3s})^2 +1/(12^{4s})^2 +1/(12^{5s})^2 +..)=12^{2s} +(12^{2s})^2 +(12^{3s})^2 +(12^{4s})^2 +(12^{5s})^2 +..$

Therefore: $- 1-(1/12^{2s}+1/144^{2s}+1/1728^{2s}+1/20736^{2s}+1/248832^{2s}+ ..)=12^{2s}+144^{2s}+1728^{2s}+20736^{2s}+248832^{2s}+...$

We have: $- 1-(1/\prod p^{2s}+1/\prod p^{4s}+1/\prod p^{6s}+1/\prod p^{8s}+1/\prod p^{10s}+...) =\prod p^{2s} +\prod p^{4s} +\prod p^{6s} +\prod p^{8s} +\prod p^{10s} +...$

Then: $- 1-(1/\prod p^{2s}+1/(\prod p^{2s})^2+1/(\prod p^{3s})^2+1/(\prod p^{4s})^2+1/(\prod p^{5s})^2+..)=\prod p^{2s}+(\prod p^{2s})^2+(\prod p^{3s})^2+(\prod p^{4s})^2+(\prod p^{5s})^2 +..$

Let us sum the whole parts, and we get as a result:

$- 1- (1/2^{2s} +1/4^{2s} +1/8^{2s} +1/16^{2s} +1/32^{2s} + ...) = 2^{2s} +4^{2s} +8^{2s} +16^{2s} +32^{2s} +...$

+

$- 1- (1/3^{2s} +1/9^{2s} +1/27^{2s} +1/81^{2s} +1/243^{2s} + ...) = 3^{2s} +9^{2s} +27^{2s} +81^{2s} +243^{2s} +...$

+

$- 1- (1/5^{2s} +1/25^{2s} +1/125^{2s} +1/625^{2s} +1/3125^{2s} + ...) = 5^{2s} +25^{2s} +125^{2s} +625^{2s} +3125^{2s} +...$

+

$- 1-(1/7^{2s} +1/49^{2s} +1/343^{2s} +1/2401^{2s} +1/16807^{2s} + ..) = 7^{2s} +49^{2s} +343^{2s} +2401^{2s} +16807^{2s} +...$

+

....

+

....

+

$- 1- (1/P^{2s}+1/(P^{2s})^2+1/(P^{3s})^2+1/(P^{4s})^2+1/(P^{5s})^2+...)= P^{2s}+(P^{2s})^2+(P^{3s})^2+(P^{4s})^2+(P^{5s})^2 +...$

+

$- 1-(1/6^{2s} +1/36^{2s} +1/216^{2s} +1/1296^{2s} +1/7776^{2s} + ..) = 6^{2s} +36^{2s} +216^{2s} +1296^{2s} +7776^{2s} +...$

+

$- 1-(1/10^{2s} +1/100^{2s} +1/1000^{2s} +1/10000^{2s} +1/100000^{2s} + ..) = 10^{2s}+100^{2s}+1000^{2s}+10000^{2s}+100000^{2s}+...$

+

$- 1-(1/12^{2s} +1/144^{2s} +1/1728^{2s} +1/20736^{2s} +1/248832^{2s} + ..) = 12^{2s}+144^{2s}+1728^{2s}+20736^{2s}+248832^{2s}+...$

+

....

+

....

+

$- 1- (1/\prod p^{2s}+1/(\prod p^{2s})^2 +1/(\prod p^{3s})^2+1/(\prod p^{4s})^2 +1/(\prod p^{5s})^2 +..)=\prod p^{2s}+(\prod p^{2s})^2+(\prod p^{3s})^2+(\prod p^{4s})^2+(\prod p^{5s})^2+..$

---

1 $=- (1+1+1+1+...) - (1/2^{2s}+1/3^{2s}+1/4^{2s}+1/5^{2s}+1/6^{2s}+1/7^{2s}+...) = 2^{2s}+3^{2s}+4^{2s}+5^{2s}+6^{2s}+7^{2s}+...$

$=- Z(0) - (1/2^{2s}+1/3^{2s}+1/4^{2s}+1/5^{2s}+1/6^{2s}+1/7^{2s}+...) = 2^{2s}+3^{2s}+4^{2s}+5^{2s}+6^{2s}+7^{2s}+...$

$=- Z(0)+ \sum_{n=1}^{\infty} even.p - \sum_{n=1}^{\infty} even.p - (1/2^{2s}+1/3^{2s}+1/4^{2s}+1/5^{2s}+1/6^{2s}+1/7^{2s}+...) = 2^{2s}+3^{2s}+4^{2s}+5^{2s}+6^{2s}+7^{2s}+...$

$= - Z(0) - \sum_{n=1}^{\infty} even.p - (1+1/2^{2s}+1/3^{2s}+1/4^{2s}+1/5^{2s}+1/6^{2s}+1/7^{2s}+...) = 1+2^{2s}+3^{2s}+4^{2s}+5^{2s}+6^{2s}+7^{2s}+...$

We have: $Z(2S) = 1+1/2^{2s}+1/3^{2s}+1/4^{2s}+1/5^{2s}+1/6^{2s}+1/7^{2s}+...$

We have: $Z'(2S) = Z(-2S) = 1+2^{2s}+3^{2s}+4^{2s}+5^{2s}+6^{2s}+7^{2s}+...$

Then the equation 1 will be: $- Z(0) - \sum_{n=1}^{\infty} even.p - Z(2S) = Z(-2S)$

Then the equation 1 will be: $2 - Z(0) - Z(2S) = Z(-2S)$

We have: $Z(0) = 2 - \prod^2/6$

Then: $2 - (2 - \prod^2/6) - Z(2S) = Z(-2S)$

Therefore: $\prod^2/6 - Z(2S) = Z(-2S)$

As a conclusion we get:

$$\mathbf{Z(2S) + Z(-2S) = \prod^2/6}$$

$$\mathbf{Z(2S) + Z'(2S) = \prod^2/6}$$

$$\mathbf{Z(2S) + Z(-2S) - \prod^2/6 = 0}$$

$$\mathbf{Z(2S) + Z'(2S) - \prod^2/6 = 0}$$

This is Method and Formula 145

** Theorem and Formula 146

Using Method and Formula 143, we get :

$Z(S) = Z(-S) = \prod^2/6$

Let $S = 2N$, hence S is natural number

Then: 1 $= Z(2N) + Z(-2N) = \prod^2/6$

We have :

$Z(2N) = 1 + 1/2^{2N} + 1/3^{2N} + 1/4^{2N} + 1/5^{2N} + \ldots\ldots$

Using **EULER Formula**, we have:

$Z(2N) = 1 + 1/2^{2N} + 1/3^{2N} + 1/4^{2N} + 1/5^{2N} + \ldots\ldots = |B_{2N}| *(2^{2N-1} *\prod^{2N})/(2N)!$

Then:

1 $\Longleftrightarrow |B_{2N}| *(2^{2N-1} *\prod^{2N})/(2N)! + Z(-2N) = \prod^2/6$

Therefore:

1 $\Longleftrightarrow$ $\mathbf{Z(-2N) = \prod^2/6 - |B_{2N}| *(2^{2N-1} *\prod^{2N})/(2N)!}$

This is Theorem and Formula 146

Special Formula 146 , when S = - 4 is :

$Z(-4) = \prod^2/6 - \prod^4/90 \approx 0{,}563$

Special Formula 146 , when S = - 6 is :

$Z(-6) = \prod^2/6 - \prod^6/945 \approx 0{,}629$

** Theorem and Notion 147:

*** Formula 148:

We have:

$Z(S) = \prod(-P^s/(1-P^s)) = (-2^s/(1-2^s))* (-3^s/(1-3^s))* (-5^s/(1-5^s))* (-7^s/(1-7^s))*$ ....

And we have:

$Z(- S) = \prod(1/(1-P^s)) = (1/(1-2^s))* (1/(1-3^s))* (1/(1-5^s))* (1/(1-7^s))*$ ....

And we have: By using Theorem and Formula 143

$Z(-S) + Z(S) = \prod^2/6$

we get as a result this :

$[(1/(1-2^s))*(1/(1-3^s))*(1/(1-5^s))*...]+[(-2^s/(1-2^s))*(-3^s/(1-3^s))*(-5^s/(1-5^s)*...] = \prod^2/6$

Then:

$[(1/(1-2^s))*(1/(1-3^s))*(1/(1-5^s))*...]+[(1/(1-2^s))*(1/(1-3^s))*(1/(1-5^s))*...)*((-2^S)*(-3^S)*(-5^S)*...)] = \prod^2/6$

Therefore:

1 $=[(1/(1-2^s))*(1/(1-3^s))*(1/(1-5^s))*...]*[1+ ((-2^S)*(-3^S)*(-5^S)*(-7^S)*(-11^S)*...)] = \prod^2/6$

We have:

$Z(- S) = \prod(1/(1-P^s)) = (1/(1-2^s))* (1/(1-3^s))* (1/(1-5^s))* (1/(1-7^s))*$ ....

Then the equation 1 will be :

1 $\Longleftrightarrow$ $\mathbf{[1+ ((-2^S)*(-3^S)*(-5^S)*(-7^S)*(-11^S)*...)]* Z(- S) = \prod^2/6}$

This is Formula 148

*** Formula 149:

<u>Question: what will be the result if we multiply the opposite numbers of all prime numbers by themselves until the infinity?</u>

By using Formula 148 , we have:

$$[1+ ((-2^S)*(-3^S)*(-5^S)*(-7^S)*(-11^S)*...)]* Z(- S) = \Pi^2/6$$

Let S = 1

then the formula will be :

$$(1) = [1+ ((-2^1)*(-3^1)*(-5^1)*(-7^1)*(-11^1)*...)]* Z(- 1) = \Pi^2/6$$

Therefore:

$$(1) \Longleftrightarrow [1+ ((-2)*(-3)*(-5)*(-7)*(-11)*...)]* Z(- 1) = \Pi^2/6$$

We have :

$$Z(- 1) = 1+2+3+4+5+6+7+8+9+10+11+............... = -1/12$$

Then the equation will be :

$$(1) \Longleftrightarrow [1+ ((-2)*(-3)*(-5)*(-7)*(-11)*...)]*(- 1/12) = \Pi^2/6$$

Therefore:

$$(1) \Longleftrightarrow [1+ ((-2)*(-3)*(-5)*(-7)*(-11)*...)] = (-12\Pi^2)/6$$

As a result:

$$(1) \Longleftrightarrow [1+ ((-2)*(-3)*(-5)*(-7)*(-11)*...)] = -2\Pi^2$$

Then:

$$(1) \Longleftrightarrow \mathbf{((-2)*(-3)*(-5)*(-7)*(-11)*...) = -2\Pi^2 -1 = - (2\Pi^2 +1)}$$

This prove that if we multiply (-)*(-) until the unfinity we get (-)

This is Formula 149

*** Formula 150:

<u>Question: what will be the result if we multiply the reciprocals of the opposite numbers of all prime numbers by themselves until the infinity?</u>

By using Formula 148 , we have:

$$[1+ ((-2^S)*(-3^S)*(-5^S)*(-7^S)*(-11^S)*...)]* Z(- S) = \prod^2/6$$

Let S = -1

then the formula will be :

$$1 \quad = [1+ ((-2^{-1})*(-3^{-1})*(-5^{-1})*(-7^{-1})*(-11^{-1})*...)]* Z(1) = \prod^2/6$$

Therefore:

$$1 \quad \Longleftrightarrow [1+ ((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...)]* Z(1) = \prod^2/6$$

Using Method and Formula 142

Then :

$$Z(1) + Z(-1) = \prod^2/6$$

Therefore:

$$Z(1) = \prod^2/6 - Z(-1)$$

As a result:

$$Z(1) = \prod^2/6 + 1/12 = (2\prod^2 +1)/12$$

Let us substitute the value of $Z(1)$ in the equation 1

$$\Longleftrightarrow [1+ ((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...)]* (2\prod^2 +1)/12 = \prod^2/6$$

$$\Longleftrightarrow [1+ ((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...)]= 12\prod^2/(6*(2\prod^2 +1))$$

$$\Longleftrightarrow [1+ ((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...)]= 2\prod^2/(2\prod^2 +1)$$

$$\Longleftrightarrow ((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...)= 2\prod^2/(2\prod^2 +1) \quad -1$$

$$\Longleftrightarrow ((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...)= [2\prod^2 - (2\prod^2 +1)]/(2\prod^2 +1)$$

$$\Longleftrightarrow \mathbf{((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...)= - 1/(2\prod^2 +1)}$$

This still prove that if we multiply (-)*(-) until the unfinity we get (-)

This is Formula 150

*** Formula 151:

Question: what will be the result if we multiply the number 1 by itself until the infinity?

Using Formula 149 , we have :

$$((-2)*(-3)*(-5)*(-7)*(-11)*...) = -2\prod^2 -1 = -(2\prod^2 +1)$$

Using Formula 150 , we have :

$$((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...) = -1/(2\prod^2 +1)$$

Let us multiply Formula 149 by Formula 150, then we get :

$$1 = ((-2)*(-3)*(-5)*(-7)*(-11)*...)*((-1/2)*(-1/3)*(-1/5)*(-1/7)*(-1/11)*...) = (-(2\prod^2 +1))*(-1/(2\prod^2 +1))$$

$$1 \Longleftrightarrow [(-2)*(-1/2)]*[(-3)*(-1/3)]*[(-5)*(-1/5)]*[(-7)*(-1/7)]*..... = (2\prod^2 +1)/(2\prod^2 +1)$$

$$1 \Longleftrightarrow \mathbf{1*1*1*1*1*1*1*1*1*1*1..... = 1}$$

This prove that if we multiply (+) by (+) until the unfinity we get (+)

This is Formula 151

** From classical mathematics to modern mathematics: postulate dropped down and new notions are being established, and the path of mathematics has been corrected

In classical mathematics, in the history of humanity mathematicians and scientist in general agree that if for example multiply the number 3 by itself until the infinity the result will be the infinity

Hence $x = 3^{(n+1)} = +\infty$

Despite using artificial intelligence Chat Gpt or DeepSeek , we get the same result that is infinity

But in modern mathematics and thanks to **Theorem and notion 1 of Zero** , we get as a result 0 , hence:

$3*3*3*\ldots\ldots. = 0$

So apart from -1 and 0 and 1 ,any complex number S multiplied by itself until the infinity is 0

Hence: $S*S*S*\ldots\ldots. = 0$

In classical mathematics, the logarithm function is not defined in 0 , it is defined in $]\,0, +\infty[$, that means log(0) does not exist hence $\log(0) = \emptyset$

But in modern mathematics, the logarithm function is defined in 0

Hence : $Z(0) = \log(0) = 2 - \prod^2/6 = 0{,}356733333$

Log (0) or Z(0) has the same properties of 0, hence it is an absorbent element, but it does not have the same value

In classical mathematics , EULER came up with his famous formula for S = 2

$$Z(2) = 1+ 1/2^2 +1/3^2 +1/4^2 +1/5^2 +1/6^2 +1/7^2 +\ldots\ldots. = \prod^2/6$$

In modern mathematics, we came up with generalized EULER formula for any complex number S that is :

Theorem and Formula 143 $Z(S) + Z(-S) = \prod^2/6$

In classical mathematics, one of postulate that we strongly believe states that if we sum up natural numbers that are greater than 1 and their reciprocals, and we add 1 to this sum, automatically we get positive numbers

In modern mathematics, this postulate has dropped down. Now thanks to **Theorem and notion 2 of Zero** , we get new and accurate result , hence if we sum up natural numbers that are greater than 1 and their reciprocals, and we add 1 to this sum we get 0 as a result.

In classical mathematics, one of postulate that we strongly believe states that if we multiply 1 by itself until the infinity we get 1 as a result.

Hence : $1*1*1*\ldots\ldots. = 1$

In modern mathematics, this postulate has been proved. Now, thanks to **Theorem and Notion 147**, and **Formula 151** , we get accurate result.

Hence : $1*1*1*\ldots\ldots. = 1$

In classical mathematics, we have a simple complex plane that we all know

In modern mathematics, we have new concept of complex plane ,and new notions about complex numbers and complex plane have been established

Hence : $1/2 = -1/2$, and this complex plane contains emptiness spaces ,and this shape looks like a black hole

In classical mathematics, we have a critical strip , hence all non trivial zero of Riemann Zeta function lie on 1/2

In modern mathematics, we have a second critical strip , hence all non trivial zero of New Zeta function lie on -1/2

In classical mathematics, no one know the result of the product of all opposite prime number

In modern mathematics, and thanks to **Theorem and Notion 147** and thanks to Formula 149 we get accurate result: (-2)*(-3)*(-5)*(-7)*(-11)*……….. = $-2\prod^2 - 1 = -(2\prod^2 + 1)$

In classical mathematics, all trivial zeros have 0 as a value, hence: Z(-2N) = 0

In modern mathematics, and thanks to **Theorem and Notion 146**, all trivial zeros have other values.

Hence: $Z(-2N) = \prod^2/6 - |B_{2N}| * (2^{2N-1} * \prod^{2N})/(2N)!$

In classical mathematics, all mathematicians agree that if a real part of imaginary number is equal or less than 1 then the series diverges

Hence: if Re(S) ≤ 1 then: Z(S) diverges

For example :

If S = 0 then $Z(0) = 1+1+1+1+1+\ldots\ldots = +\infty$

If S = 1 then $Z(1) = 1 + 1/2 + 1/3 + 1/4 + 1/5 + \ldots = +\infty$, Harmonic series

If S = 3 then $Z(-3) = 1/1^{-3}+1/2^{-3}+1/3^{-3}+1/4^{-3}+1/5^{-3}+\ldots\ldots$

$Z(-3) = 1^3+2^3+3^3+4^3+5^3+\ldots\ldots = +\infty$

In modern mathematics, and thanks to **Theorem and Notion 143** and thanks to **Theorem and Notion 1 of Zero** and thanks to **Theorem and Notion 2 of Zero** , even if a real part of imaginary number is equal or less than 1 then the series converges

Hence: if Re(S) ≤ 1 then: Z(S) converges

If S = 0 then $Z(0) = 1+1+1+1+1+\ldots\ldots = 2 - \prod^2/6$

If S = 1 then $Z(1) = 1 + 1/2 + 1/3 + 1/4 + 1/5 + \ldots = \prod^2/6 + 1/12$

If S = 3 then $Z(-3) = 1/1^{-3}+1/2^{-3}+1/3^{-3}+1/4^{-3}+1/5^{-3}+\ldots\ldots$

$Z(-3) = 1^3+2^3+3^3+4^3+5^3+\ldots\ldots = \prod^2/6 - 1{,}202 \approx 0{,}44127$

series converges So, new concept and notion have been established to more understand number theory and complex analysis

In classical mathematics, this equivalence 1 = 0 is wrong

In modern mathematics, and thanks to **Formula 9**, and thanks to **The notion 4** , and thanks to **New Complex plane**, the previous equivalence is true

Hence : $x = 1 \Longrightarrow \forall X \in R \;\; X*1 = X*0$ means that all real numbers have 0 as a value , and this is what we can see in New Complex plane

In modern mathematics, thanks to Theorem and Notion 143 we get :

$Z(-3) = 1^3+2^3+3^3+4^3+5^3+\ldots\ldots = \prod^2/6 - Z(3) \neq +\infty$

$Z(-5) = 1^5+2^5+3^5+4^5+5^5+\ldots\ldots = \prod^2/6 - Z(5) \neq +\infty$

$Z(-7) = 1^7+2^7+3^7+4^7+5^7+\ldots\ldots = \prod^2/6 - Z(7) \neq +\infty$

$Z(-N) = 1^N+2^N+3^N+4^N+5^N+\ldots\ldots = \prod^2/6 - Z(N) \neq +\infty$

So, using **Theorem and Notion 143** , the notion of infinity + ∞ or - ∞ , has been drooped down and vanished.

** Formula 152: relationship between Zeta Z(S) and $\sum_{s/s} odd$:

Using Formula 134, we have: $Z(-S) = Z'(S) = (-1/(2^s - 1))^* \sum_{s/s} \boldsymbol{odd}$

Using Theorem and Formula 143, we have:

$Z(S) + Z'(S) = \prod^2/6$

Then we get as a result:

1 $= \prod^2/6 - Z(S) = (-1/(2^s - 1))^* \sum_{s/s} \boldsymbol{odd}$

Then:

1 $\Longleftrightarrow - Z(S) = (-1/(2^s - 1))^* \sum_{s/s} \boldsymbol{odd} - \prod^2/6$

1 $\Longleftrightarrow Z(S) = (1/(2^s - 1))^* \sum_{s/s} \boldsymbol{odd} + \prod^2/6$

1 $\Longleftrightarrow (1/(2^s - 1))^* \sum_{s/s} \boldsymbol{odd} = Z(S) - \prod^2/6$

1 $\Longleftrightarrow \boldsymbol{\sum_{s/s} odd = (2^s - 1)^*Z(S) - (2^s - 1)^* \prod^2/6}$

This is Formula 152

** Formula 153: relationship between Zeta Z(S) and $\sum_{s/s}$ Even :

Using Method and Formula 138, we have got : $\sum_{s/s} \boldsymbol{Even} = 2^s {}^*Z'(S)$

Using Theorem and Formula 143, we have:

$Z(S) + Z'(S) = \prod^2/6$

Then we get as a result:

1 $= \sum_{s/s} \boldsymbol{Even} = 2^s {}^*(\prod^2/6 - Z(S))$

1 $\Longleftrightarrow \boldsymbol{\sum_{s/s} Even = 2^s {}^*\prod^2/6 - 2^s {}^*Z(S)}$

1 $\Longleftrightarrow 1/2^s {}^* \sum_{s/s} \boldsymbol{Even} = \prod^2/6 - {}^*Z(S)$

1 $\Longleftrightarrow \boldsymbol{Z(S) = \prod^2/6 - 1/2^s {}^* \sum_{s/s} Even}$

This is Formula 153

** Formula 154: relationship between Zeta prime Z'(S) and $\sum_{s/s} \overline{\text{odd}}$:

Using Method and Formula 135, we have:

$Z(S) = (2^S/(2^S - 1)) * \sum_{s/s} \overline{odd}$ and $\sum_{s/s} \overline{odd} = ((2^S - 1)/2^S)*Z(S)$

Using Theorem and Formula 143, we have:

$Z(S) + Z'(S) = \prod^2/6$

Then we get as a result:

(1) $= \prod^2/6 - Z'(S) = (2^S/(2^S - 1))* \sum_{s/s} \overline{odd}$

Then:

(1) $\Longleftrightarrow - Z'(S) = (2^S/(2^S - 1))* \sum_{s/s} \overline{odd} - \prod^2/6$

(1) $\Longleftrightarrow$ $\mathbf{Z'(S) = \prod^2/6 - (2^s/(2^s - 1))* \sum_{s/s} \overline{odd}}$

And we have:

(1) $\Longleftrightarrow \sum_{s/s} \overline{odd} = ((2^S - 1)/2^S)* Z(S)$

(1) $\Longleftrightarrow \sum_{s/s} \overline{odd} = ((2^S - 1)/2^S)* (\prod^2/6 - Z'(S))$

(1) $\Longleftrightarrow$ $\mathbf{\sum_{s/s} \overline{odd} = ((2^s - 1)/2^s)* \prod^2/6 - ((2^s - 1)/2^s)*Z'(S)}$

This is Formula 154

** Formula 155: relationship between Zeta prime Z'(S) and $\sum_{s/s} \overline{\text{Even}}$:

Using Method and Formula 139, we have: $Z(S) = 2^S * \sum_{s/s} \overline{Even}$ and $\sum_{s/s} \overline{Even} = 1/2^S *Z(S)$

Using Theorem and Formula 143, we have: $Z(S) + Z'(S) = \prod^2/6$

Then we get as a result:

(1) $= \prod^2/6 - Z'(S) = 2^S * \sum_{s/s} \overline{Even}$

(1) $\Longleftrightarrow$ $\mathbf{Z'(S) = \prod^2/6 - 2^s *\sum_{s/s} \overline{Even}}$

(1) $\Longleftrightarrow$ $\mathbf{\sum_{s/s} \overline{Even} = 1/2^s * \prod^2/6 - 1/2^s * Z'(S)}$

This is Formula 155

** Formula 156: relationship between $\sum_{s/s}\overline{\textbf{odd}}$ and $\sum_{s/s}\textbf{Even}$:

Using Method and Formula 135, we have:

$Z(S) = (2^s/(2^s -1)) * \sum_{s/s}\overline{odd}$ and $\sum_{s/s}\overline{odd} = ((2^s - 1)/2^s)*Z(S)$

Using Theorem and Formula 143, we have:

$Z(S) + Z'(S) = \prod^2/6$

Then we get as a result:

1 $= \sum_{s/s}\overline{odd} = ((2^s -1)/2^s)* (\prod^2/6 - Z'(S))$

Using Method and Formula 138, we have: $Z'(S) = 1/2^s * \sum_{s/s} Even$

Let us substitute in the equation 1 and we get as a result :

1 $\Longleftrightarrow \sum_{s/s}\overline{odd} = ((2^s -1)/2^s)* (\prod^2/6 - 1/2^s * \sum_{s/s} Even)$

1 $\Longleftrightarrow \sum_{s/s}\overline{odd} = ((2^s -1)/2^s)*\prod^2/6 - ((2^s -1)/2^{2s})* \sum_{s/s} Even)$

This is Formula 156

** Formula 157: relationship between $\sum_{s/s}\overline{\textbf{odd}}$ and $\sum_{s/s}\textbf{odd}$:

Using Method and Formula 138, we have: $\sum_{s/s} Even = - (2^s/2^s -1)*\sum_{s/s} odd$

Using Formula 156, we have:

$\sum_{s/s}\overline{odd} = ((2^s -1)/2^s)*\prod^2/6 - ((2^s -1)/2^{2s}) * \sum_{s/s} Even$

Let us substitute Formula 138 value to Formula 156

Then we get :

$\sum_{s/s}\overline{odd} = ((2^s -1)/2^s)*\prod^2/6 - ((2^s -1)/2^{2s}) * - (2^s /(2^s -1))* \sum_{s/s} odd$

Therefore :

$$\sum_{s/s}\overline{odd} = ((2^s -1)/2^s)*\prod^2/6 - 1/2^s * \sum_{s/s} odd$$

This is Formula 157

** Formula 158: relationship between $\sum_{s/s}\text{Even}$ and $\sum_{s/s}\overline{\text{Even}}$:

Using Method and Formula 139, we have:

$$\sum_{s/s}\overline{\boldsymbol{Even}} = 1/2^s * Z(S)$$

Using Theorem and Formula 143, we have:

$$Z(S) + Z'(S) = \prod^2/6$$

Then we get as a result:

$$1 = \sum_{s/s}\overline{\boldsymbol{Even}} = 1/2^s * (\prod^2/6 - Z'(S))$$

Using Method and Formula 138, we have:

$$Z'(S) = 1/2^s * \sum_{s/s}\boldsymbol{Even}$$

Let us substitute this value in the equation 1, then we get :

$$1 \Longleftrightarrow \sum_{s/s}\overline{\boldsymbol{Even}} = 1/2^s * \prod^2/6 - 1/2^{2s} * \sum_{s/s}\boldsymbol{Even}$$

This is Formula 158

** Formula 159: relationship between

$\sum_{s/s}\overline{\text{Even}}$ and $\sum_{s/s}\text{odd}$:

Using Formula 158, we have:

$$1 = \sum_{s/s}\overline{\boldsymbol{Even}} = 1/2^s * \prod^2/6 - 1/2^{2s} * \sum_{s/s}\boldsymbol{Even}$$

Using Method and Formula 138, we have:

$$\sum_{s/s}\boldsymbol{Even} = -(2^s/(2^s - 1)) * \sum_{s/s}\boldsymbol{odd}$$

We substitute $\sum_{s/s}\boldsymbol{Even}$ by its value in the equation 1 and we get :

$$1 \Longleftrightarrow \sum_{s/s}\overline{\boldsymbol{Even}} = 1/2^s * \prod^2/6 - 1/2^{2s} * -(2^s/(2^s - 1)) * \sum_{s/s}\boldsymbol{odd}$$

$$\Longleftrightarrow \sum_{s/s}\overline{\boldsymbol{Even}} = 1/2^s * \prod^2/6 + 1/(2^s * (2^s - 1)) * \sum_{s/s}\boldsymbol{odd}$$

This is Formula 159

** Formula 160:

Using Formula 140, we have:

$$\sum_{s/s} \overline{Even} = \prod^{s-1}.\sin(\prod S/2).\text{ɲ}(1 - S).Z(1 - S)$$

Using Formula 158, we have:

$$1 = \sum_{s/s} \overline{Even} = 1/2^{s} * \prod^{2}/6 \; - 1/2^{2s} * \sum_{s/s} Even$$

$$1 \Longleftrightarrow 2^{2s} * \sum_{s/s} \overline{Even} = 2^{s} * \prod^{2}/6 \; - \sum_{s/s} Even$$

$$1 \Longleftrightarrow \sum_{s/s} Even = 2^{s} * \prod^{2}/6 \; - 2^{2s} * \sum_{s/s} \overline{Even}$$

Let us substitute the value of Formula 140 in the equation 1, and we get:

$$1 \Longleftrightarrow \sum_{s/s} Even = 2^{s} * \prod^{2}/6 \; - 2^{2s} * \prod^{s-1}.\sin(\prod S/2).\text{ɲ}(1 - S).Z(1 - S)$$

This is Formula 160

** Formula 161:

Using Formula 140, we have:

$$\sum_{s/s} \overline{Even} = \prod^{s-1}.\sin(\prod S/2).\text{ɲ}(1 - S).Z(1 - S)$$

Using Formula 159, we have:

$$1 \quad = \sum_{s/s} \overline{Even} = 1/2^{s} * \prod^{2}/6 \; + (1/(2^{s}*(2^{s} - 1)) * \sum_{s/s} odd$$

$$1 \Longleftrightarrow 2^{s}*(2^{s} - 1)*\sum_{s/s} \overline{Even} = (2^{s} - 1)*\prod^{2}/6 \; + \sum_{s/s} odd$$

$$1 \Longleftrightarrow \sum_{s/s} odd = 2^{s}*(2^{s} - 1)*\sum_{s/s} \overline{Even} \; - (2^{s} - 1)*\prod^{2}/6$$

Let us substitute the value of Formula 140 in the equation 1, and we get:

$$1 \Longleftrightarrow \sum_{s/s} odd = 2^{s}*(2^{s} - 1)*\prod^{s-1}.\sin(\prod S/2).\text{ɲ}(1 - S).Z(1 - S) \; - (2^{s} - 1)*\prod^{2}/6$$

This is Formula 161

** Formula 162:

We have:

$$Z'(S) - \sum_{s/s} \boldsymbol{odd} - \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p =_{s/s} Rest$$

Using Theorem and Formula 143, we have:

$$Z(S) + Z'(S) = \prod^2/6$$

Then we get as a result:

$$1' = (\prod^2/6 - Z(S)) - \sum_{s/s} \boldsymbol{odd} - \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p =_{s/s} Rest$$

Using Formula 157, we have:

$$1 = \sum_{s/s} \overline{\boldsymbol{odd}} = ((2^s - 1)/2^s) * \prod^2/6 \quad -1/2^s * \sum_{s/s} \boldsymbol{odd}$$

$$1 \Longleftrightarrow 2^s * \sum_{s/s} \overline{\boldsymbol{odd}} = (2^s - 1) * \prod^2/6 \quad - \sum_{s/s} \boldsymbol{odd}$$

$$1 \Longleftrightarrow 2^s * \sum_{s/s} \overline{\boldsymbol{odd}} - (2^s - 1) * \prod^2/6 = - \sum_{s/s} \boldsymbol{odd}$$

$$1 \Longleftrightarrow \sum_{s/s} \boldsymbol{odd} = (2^s - 1) * \prod^2/6 - 2^s * \sum_{s/s} \overline{\boldsymbol{odd}}$$

Let us substitute the value of $\sum_{s/s} \boldsymbol{odd}$ in the equation 1', and we get as a result :

$$1' \Longleftrightarrow (\prod^2/6 - Z(S)) - ((2^s - 1) * \prod^2/6 - 2^s * \sum_{s/s} \overline{\boldsymbol{odd}}) - \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p =_{s/s} Rest$$

$$1' \Longleftrightarrow \prod^2/6 - Z(S) - (2^s - 1) * \prod^2/6 + 2^s * \sum_{s/s} \overline{\boldsymbol{odd}} - \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p =_{s/s} Rest$$

$$1' \Longleftrightarrow \prod^2/6 - Z(S) - 2^s * \prod^2/6 + \prod^2/6 + 2^s * \sum_{s/s} \overline{\boldsymbol{odd}} - \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p =_{s/s} Rest$$

$$1' \Longleftrightarrow \boldsymbol{\prod^2/3 - Z(S) - 2^s * \prod^2/6 + 2^s * \sum_{s/s} \overline{odd} - \sum_{\substack{n=1 \\ s/s}}^{\infty} even.p =_{s/s} Rest}$$

This is Formula 162

** Formula 163:

We have:

$$Z(S) - \sum_{s/s} \overline{\boldsymbol{odd}} - \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} = {}_{s/s}\overline{Rest}$$

Using Theorem and Formula 143, we have:

$$Z(S) + Z'(S) = \prod^2/6$$

Then we get as a result:

$$1' = (\prod^2/6 - Z'(S)) - \sum_{s/s} \overline{\boldsymbol{odd}} - \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} = {}_{s/s}\overline{Rest}$$

Using Formula 157, we have:

$$1 = \sum_{s/s} \overline{\boldsymbol{odd}} = ((2^s-1)/2^s)*\prod^2/6 \quad -1/2^s * \sum_{s/s} \boldsymbol{odd}$$

Let us substitute the value of Formula 157 in the equation 1',

and we get as a result :

$$1' \Longleftrightarrow (\prod^2/6 - Z'(S)) - (((2^s-1)/2^s)*\prod^2/6 \ - 1/2^s * \sum_{s/s} \boldsymbol{odd}) - \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{even.p} = {}_{s/s}\overline{Rest}$$

$$1' \Longleftrightarrow \prod^2/6 - Z'(S) - ((2^s-1)/2^s)*\prod^2/6 + 1/2^s * \sum_{s/s} \boldsymbol{odd} - \sum_{\substack{n=1 \\ s/s}}^{\infty} \overline{\boldsymbol{even.p}} = {}_{s/s}\overline{\boldsymbol{Rest}}$$

This is Formula 163

** Formula 164:

we have: 1 = $Z(S) = 2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S)$

Using Theorem and Formula 143, we have:

2 = $Z(1-S) + Z'(1-S) = \prod^{2}/6$

we have: $Z'(1-S) = Z(-(1-S))$

Then : 2 $\Longleftrightarrow Z(1-S) + Z(-(1-S)) = \prod^{2}/6$

Therefore: 2 $\Longleftrightarrow Z(1 - S) + Z(S - 1) = \prod^{2}/6$

As a result : 2 $\Longleftrightarrow Z(1 - S) = \prod^{2}/6 - Z(S - 1)$

Let us substitute the value of the equation 2 in the equation 1 , and we get as a result :

1 $\Longleftrightarrow Z(S) = 2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).(\prod^{2}/6 - Z(S - 1))$

1 $\Longleftrightarrow Z(S) = 2^{s}.\prod^{s-1}. \prod^{2}/6.\sin(\prod S/2).\eta(1 - S) -2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(S - 1)$

1 $\Longleftrightarrow$ $\mathbf{Z(S) = 2^{s}.\prod^{S+1}/6 .\sin(\prod S/2). \eta(1 - S) - 2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(S - 1)}$

This is Formula 164

** Formula 165:

we have: 1 = $Z(S) = 2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S)$

Using Theorem and Formula 143, we have:

2 = $Z(S) + Z'(S) = \prod^{2}/6$

Then : 2 $\Longleftrightarrow Z (S) = \prod^{2}/6 - Z'(S)$

Let us substitute the value of the equation 2 in the equation 1 , and we get as a result :

1 $\Longleftrightarrow \prod^{2}/6 - Z'(S) = 2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S)$

1 $\Longleftrightarrow - Z'(S) = 2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S) - \prod^{2}/6$

1 $\Longleftrightarrow$ $\mathbf{Z'(S) = - 2^{s}.\prod^{s-1}.\sin(\prod S/2).\eta(1 - S).Z(1 - S) + \prod^{2}/6}$

This is Formula 165

** Formula 166:

Using Formula 164, we have:

$$1 = Z(S) = 2^s.\ \Pi^{S+1}/6.\sin(\Pi S/2).ɲ(1-S)\ \ -2^s.\Pi^{s-1}.\sin(\Pi S/2).ɲ(1-S).Z(S-1)$$

Using Theorem and Formula 143, we have:

$$2 = Z(S) + Z'(S) = \Pi^2/6$$

Then : $2 \Longleftrightarrow Z(S) = \Pi^2/6\ - Z'(S)$

Let us substitute the value of the equation 2 in the equation 1 , and we get as a result :

$$1 \Longleftrightarrow \Pi^2/6\ - Z'(S) = 2^s.\ \Pi^{S+1}/6.\sin(\Pi S/2).ɲ(1-S)\ \ -2^s.\Pi^{s-1}.\sin(\Pi S/2).ɲ(1-S).Z(S-1)$$

$$1 \Longleftrightarrow -Z'(S)= 2^s.\ \Pi^{S+1}/6.\sin(\Pi S/2).ɲ(1-S)\ \ -\Pi^2/6\ \ -2^s.\Pi^{s-1}.\sin(\Pi S/2).ɲ(1-S).Z(S-1)$$

$$1 \Longleftrightarrow \mathbf{Z'(S)= -2^s.\ \Pi^{S+1}/6.\sin(\Pi S/2).ɲ(1-S)\ \ +\Pi^2/6\ \ +2^s.\Pi^{s-1}.\sin(\Pi S/2).ɲ(1-S).Z(S-1)}$$

This is Formula 166

** Formula 167: Calculating $\sum \overline{\text{All. Numbers}}$

Using Sidi Method and Formula 144 , we have:

$$1 = Z(0) = 2 - \Pi^2/6$$

$$1 \Longleftrightarrow Z(0) + \Pi^2/6\ \ = 2$$

$$1 \Longleftrightarrow (6Z(0) + \Pi^2)/6\ \ = 2$$

$$1 \Longleftrightarrow 6/(6Z(0) + \Pi^2)\ \ = 1/2$$

$$1 \Longleftrightarrow 1/6*(6/(6Z(0) + \Pi^2))\ \ = 1/6*\ 1/2$$

$$1 \Longleftrightarrow 1/(6Z(0) + \Pi^2)\ \ = 1/12$$

Using Method and Formula 142, we have:

$$2 = Z(1) + Z(-1) = \Pi^2/6$$

Then: $2 \Longleftrightarrow \sum \overline{All.Numbers}\ + \sum All.Numbers = \Pi^2/6$

we have: $\sum All.Numbers$ = 1+2+3+4+5+6+7+8+9+10+11+..........

According to **Ramanujan Formula** we get :

$\sum All.Numbers$ = 1+2+3+4+5+6+7+8+9+10+11+.......... = -1/12

Let us substitute the value of Ramanujan in the equation 2, and we get as a result :

2 $\Longleftrightarrow \sum \overline{All.Numbers}$ + (-1/12)= $\prod^2/6$

2 $\Longleftrightarrow \sum \overline{All.Numbers}$ = 1/12 + $\prod^2/6$ = (1+ 2$\prod^2$)/12

According to the equation 1 we have :

1 $\Longleftrightarrow$ 1/(6Z(0) + $\prod^2$) = 1/12

Then:

2 $\Longleftrightarrow \sum \overline{All.Numbers}$ = 1/12 + $\prod^2/6$ = (1+ 2$\prod^2$)/12 = 1/(6Z(0) + $\prod^2$) + $\prod^2/6$

2 $\Longleftrightarrow \sum \overline{All.Numbers}$ **= 1/12 + $\prod^2/6$ = (1+ 2$\prod^2$)/12 =($\prod^4$ + (6$\prod^2$.Z(0)) + 6)/(6$\prod^2$ +36Z(0))**

This is Formula 167

** Formula 168: Calculating $\sum \overline{\text{odd}}$

Using Method and Formula 137, we have:

1 = $\sum \overline{odd}$ = 1/2.$\sum \overline{All.Numbers}$

Using Formula 167, we have:

2 = $\sum \overline{All.Numbers}$ = 1/12 + $\prod^2/6$

Let us substitute the value of equation 1 in the equation 2, and we get as a result :

2 $\Longleftrightarrow \sum \overline{odd}$ = 1/24 + $\prod^2/12$ = (1+ 2$\prod^2$)/24 = ($\prod^4$ + (6$\prod^2$. Z(0)) +6)/(12$\prod^2$ +72.Z(0))

$\sum \overline{odd}$= 1+1/3+1/5+1/7+1/9+1/11+...=1/24 +$\prod^2/12$ =(1+2$\prod^2$)/24 =($\prod^4$ +(6$\prod^2$. Z(0)) +6)/(12$\prod^2$ +72.Z(0))

Formula 168

** Formula 169: Calculating $\sum \overline{\text{Even}}$

Using Method and Formula 137, we have:

1 $= \sum \overline{Even} = 1/2.\sum \overline{All.Numbers}$

Using Formula 167, we have:

2 $= \sum \overline{All.Numbers} = 1/12 + \prod^2/6$

Let us substitute the value of equation 1 in the equation 2, and we get as a result :

2 $\Leftrightarrow \sum \overline{Even} = 1/24 + \prod^2/12 = (1+ 2\prod^2)/24 = (\prod^4 + (6\prod^2. Z(0)) +6)/(12\prod^2 +72.Z(0))$

$\sum \overline{Even}$=1+1/3+1/5+1/7+1/9+1/11+...=1/24 +$\prod^2$/12=(1+2$\prod^2$)/24 =($\prod^4$ +(6$\prod^2$. Z(0)) +6)/(12$\prod^2$ +72.Z(0))

This is Formula 169

** The equality and similarity of Formula 168 and Formula 169:

$\sum odd = \sum Even = 1/24 + \prod^2/12 = (1+ 2\prod^2)/24 = (\prod^4 + (6\prod^2. Z(0)) +6)/(12\prod^2 +72.Z(0))$

1+1/3 +1/5 +1/7 +1/9 +1/11 +...= 1/2 + 1/4 +1/6 +1/8 +1/10 +1/12 +1/14 +1/16+...

** Formula 170: Calculating $\overline{\text{Rest}}$

We have: $\overline{Rest} = \sum \overline{All.Numbers} - \sum \overline{odd} - \sum_{n=1}^{\infty} \overline{even.p}$

Using Method and Formula 133, we get:

$\overline{Rest} = \sum \overline{odd} - 1$

Then:

$\overline{Rest}$ = 1/24 +$\prod^2$/12 -1= -23/24 +$\prod^2$/12=(-23+2$\prod^2$)/24=($\prod^4$ +(6$\prod^2$ -72).Z(0) -12$\prod^2$ +6)/(72Z(0) +12$\prod^2$)

And

$\overline{Rest}$ = 1/6 +1/10 +1/12 +1/14 +1/18 +1/20 +1/22 +1/24 +1/26 +1/28 +1/30 +1/34 +.....

This is Formula 170

** Formula 171:

Using Method and Formula 144, we have:

1 $= Z(0) = 2 - \prod^2/6$

1 $\Longleftrightarrow Z(0) + \prod^2/6 = 2$

1 $\Longleftrightarrow (6Z(0) + \prod^2)/6 = 2$

1 $\Longleftrightarrow 6/(6Z(0) + \prod^2) = 1/2$

1 $\Longleftrightarrow 1/6*(6/(6Z(0) + \prod^2)) = 1/6* 1/2$

1 $\Longleftrightarrow 1/(6Z(0) + \prod^2) = 1/12$

1 $\Longleftrightarrow - 1/12 = - 1/(6Z(0) + \prod^2)$

According to Ramanujan Formula we get :

$Z(-1) = \sum All.Numbers = 1+2+3+4+5+6+7+8+9+10+11+\ldots\ldots\ldots = -1/12$

So according to the equation 1, we get as a result:

$\mathbf{Z(-1) = \sum All.Numbers = 1+2+3+4+5+6+7+8+9+10+11+\ldots.. = -1/12 =- 1/(6Z(0) + \prod^2)}$

This is Formula 171

** Formula 172:

Using Method and Formula 132, we have:

$\sum odd = - \sum All.Numbers$

According to Formula 171, we have :

$Z(-1) = \sum All.Numbers = -1/12 = - 1/(6Z(0) + \prod^2)$

Then:

$\mathbf{\sum odd = 1+3+5+7+9+11+13+15+17+\ldots\ldots = 1/12 = 1/(6Z(0) + \prod^2)}$

This is Formula 172

** Formula 173:

We have : $\sum All.Numbers = \sum Even + \sum odd$

Then: $\sum Even = \sum All.Numbers - \sum odd$

Therefore: $\sum Even$ = -1/12 -1/12 = -1/6

As a result:

$\sum Even$ = 2+4+6+8+10+12+14+16+18+20+24+...= -1/6 = -2/(6Z(0) + ∏2)

This is Formula 173

** Formula 174:

Using Method and Formula 132, we have:

1 = $Rest = \sum All.Numbers - \sum odd - \sum_{n=1}^{\infty} even.p$ = 2 - 2$\sum odd$

Using Formula 172, we have:

2 = $\sum odd$ = 1/12 = 1/(6Z(0) + $\prod^2$)

Let us substitute the value of equation 2 in the equation 1, and we get as a result :

1 $\Longleftrightarrow$ $Rest$ = 2 - 2$\sum odd$ = 2 -2*1/12 = 2 -2*(1/(6Z(0) + $\prod^2$))

$\Longleftrightarrow$ $Rest$ = 2 - 2$\sum odd$ = 2 -1/6 = 2 - (2/(6Z(0) + $\prod^2$))

$\Longleftrightarrow$ $Rest$ = 2 - 2$\sum odd$ = 11/6 = 2 - (2/(6Z(0) + $\prod^2$))

$Rest$ = 6+10+12+14+18+20+...= 11/6 = 2 - (2/(6Z(0) + $\prod^2$))=(2$\prod^2$ +12Z(0) -2)/(6Z(0) + $\prod^2$)

This is Formula 174

** In numbers theory, probabilities and randomness are regular and they are will controlled by prime numbers:

We have: Z(-1) = $\sum All.Numbers$

$\sum All.Numbers$= 1+2+3+4+5+6+7+8+9+10+11+…………………

$\sum All.Numbers$ = 1

+ ($2^1+2^2+2^3+2^4+2^5+2^6+2^7$+……..)

+ ($3^1+3^2+3^3+3^4+3^5+3^6+3^7$+……..)

+ ($5^1+5^2+5^3+5^4+5^5+5^6+5^7$+……..)

+ ($7^1+7^2+7^3+7^4+7^5+7^6+7^7$+……..)

+………………………………………………………………

+………………………………………………………………

+………………………………………………………………

+ ($P^1+P^2+P^3+P^4+P^5+P^6+P^7$+……..)

+ ($6^1+6^2+6^3+6^4+6^5+6^6+6^7$+……..) With 6 = 3*2

+ ($10^1+10^2+10^3+10^4+10^5+10^6+10^7$+……..) With 10 = 5*2

+ ($12^1+12^2+12^3+12^4+12^5+12^6+12^7$+……..) With 12 = 3*2*2

+ ($15^1+15^2+15^3+15^4+15^5+15^6+15^7$+……..) With 15 = 3*5

+………………………………………………………………

+………………………………………………………………

+………………………………………………………………

+ ($\prod p^1 + \prod p^2 + \prod p^3 + \prod p^4 + \prod p^5 + \prod p^6 + \prod p^7$ +……)

We have:

$\sum_{n=1}^{\infty} even.p$ = $2^1+2^2+2^3+2^4+2^5+2^6+2^7$+…….. = - $(P_2/(P_2 - 1))$

$\sum_{n=1}^{\infty}(3)^n$ = $3^1+3^2+3^3+3^4+3^5+3^6+3^7$+…….. = - $(P_3/(P_3 - 1))$

$\sum_{n=1}^{\infty}(5)^n$ = $5^1+5^2+5^3+5^4+5^5+5^6+5^7$+…….. = - $(P_5/(P_5 - 1))$

$\sum_{n=1}^{\infty}(7)^n$ = $7^1+7^2+7^3+7^4+7^5+7^6+7^7$+…….. = - $(P_7/(P_7 - 1))$

So as a result we get:

$$\sum All.Numbers = 1+\left(\sum_{n=1}^{\infty} even.p\right)+\left(\sum_{n=1}^{\infty}(3)^n+\sum_{n=1}^{\infty}(5)^n+\sum_{n=1}^{\infty}(7)^n+\ldots\right)+\left(6+10+12+15+18+\ldots\ldots+\prod p\right)$$

$$\boldsymbol{\sum All.Numbers = 1 - (P_2/(P_2-1))-((P_3/(P_3-1))+ (P_5/(P_5-1))+ (P_7/(P_7-1))+\ldots)+ (6+10+12+15+18+\ldots\ldots+\prod p)}$$

$$\boldsymbol{\sum All.Numbers - 1 +(P_2/(P_2-1))+((P_3/(P_3-1))+ (P_5/(P_5-1))+ (P_7/(P_7-1))+\ldots) = (6+10+12+15+18+20+22\ldots\ldots+\prod p)}$$

Left Side = **Constant**

Right side = **Probabilities And Randomness**

We have: 6 = 3*2 and 10= 5*2 15= 5*3 and 18=3*3*2= 3^2 *2 and 20=5*2*2= 5 *2^2

And 21=7*3 and 22=11*2 and 24=3*2*2*2=3*2^3 and 26=13*2= 3^2 *2 and 28=7*2*2= 7 *2^2

And 30=5*3*2 and 22=11*2 and 33=3*11 and 34=17*2 and 35=7*5

And 38=19*2 and 39=13*3 and 40=5*2*2*2=5*2^3 and so on ....

$(\prod p)_p = P_4 * P_{10} * (P^{17})_{31} * (P^n)_L * \ldots\ldots\ldots * (P^t)_y$

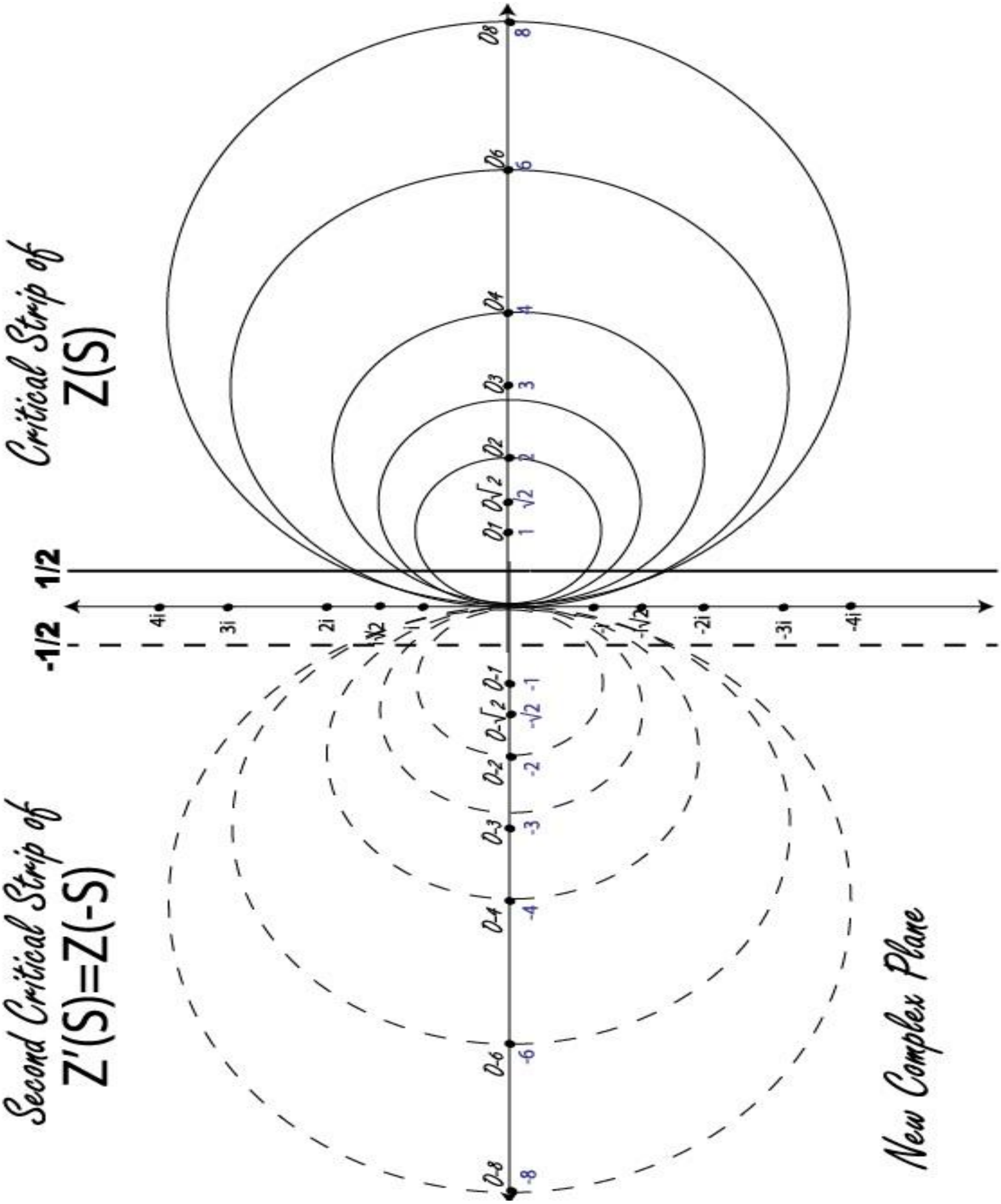
$(\prod p)_x = P_5 * (P^2)_{82} * (P^{17})_3 * \ldots\ldots\ldots\ldots\ldots (P^m)_h * \ldots\ldots\ldots * (P^w)_z$

So as a conclusion, we can say that the right side has a relationship with probabilities and randomness, in the other hand especially in left side, we have many constant values that do not change, those constant values control the right side (Probabilities and Randomness), so we can say that even the right side that is supposed to be random is will controlled by left side, so the probabilities and Randomness are regular and will controlled thanks to left side.

* The Zeta function Z(S) and the Zeta Prime Z’(S) = Z(-S):

** The function Z(S), hence Re(S) ≥ 1 and the function Z’(S) = Z (-S), hence Re(S) ≤ -1

1) The representation of complex numbers in New Complex plane that their real part is greater than 1 Re(S)≥1 , and complex numbers that their real part is less than -1 Re(S)≤-1:



In New Complex Plane , if the real part of complex numbers that belongs to : $Re(S) \in]-\infty , -1] U[1 , +\infty[$, then these complex numbers meet and intersect in zero point 0

We have :

$Z(S)= \sum_{n=1}^{+\infty} 1/n^{s} = 1/1^{s} +1/2^{s} +1/3^{s} +1/4^{s} +1/5^{s} +1/6^{s} +1/7^{s} +\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

And we have :

$Z'(S) = Z(-S) =\sum_{n=1}^{+\infty} 1/n^{-s} = \sum_{n=1}^{+\infty} n^{s} = 1^{s} + 2^{s} + 3^{s} + 4^{s} + 5^{s} + 6^{s} + 7^{s} +\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

We have :

$Z(0)= 1/1^{0} +1/2^{0} +1/3^{0} +1/4^{0} +1/5^{0} +1/6^{0} +1/7^{0} +\ldots\ldots=1+1+1+1+1+\ldots\ldots\ldots\ldots$

$Z'(0)= 1^{0} + 2^{0} + 3^{0} + 4^{0} + 5^{0} + 6^{0} + 7^{0} +\ldots\ldots=1+1+1+1+1+\ldots\ldots\ldots\ldots$

Then: $Z(0)= Z'(0)$

1) The trivial zeros of Riemann Zeta Function Z(S), and the trivial zeros of New Zeta Function Z'(S) = Z (-S):

Mathematicians have proved that the trivial zeros of Zeta function Z(S) are :

-2 , -4 , -6 , -8 , -10 , …………, -2N

So let us prove that -2 is a trivial zero of Zeta function Z(S) using our formula

If Z(S) = 0 then S = - 2 : $Z(S) = 0 \Longrightarrow S = -2$

Using Theorem and Formula 143 , we have got:

$Z(S) + Z'(S) = \pi^{2}/6$

If $Z(S) = 0$ Then Theorem and Formula 143 will be :

$Z'(S) = \pi^{2}/6$

We have: $Z'(S) = 1^{s} + 2^{s} + 3^{s} + 4^{s} + 5^{s} + 6^{s} + 7^{s} +\ldots\ldots\ldots\ldots\ldots$

Then : $Z'(S) = 1/1^{-s} + 1/2^{-s} + 1/3^{-s} + 1/4^{-s} + 1/5^{-s} + 1/6^{-s} + 1/7^{-s} +\ldots\ldots\ldots\ldots\ldots$

And we have: $\pi^{2}/6 = 1/1^{2} + 1/2^{2} + 1/3^{2} + 1/4^{2} + 1/5^{2} + 1/6^{2} + 1/7^{2} +\ldots\ldots\ldots\ldots\ldots$

Therefore: $1/1^{-s} + 1/2^{-s} + 1/3^{-s} + 1/4^{-s} + 1/5^{-s} +\ldots\ldots = 1/1^{2} + 1/2^{2} + 1/3^{2} + 1/4^{2} + 1/5^{2} +\ldots\ldots$

As a result -S = 2 then S = -2

So if $Z(S) = 0$ Then $S = -2$, and that is true

What is the trivial zeros of New Zeta Function $Z'(S)$?

Using Theorem and Formula 143 , we have got:

$$Z(S) + Z'(S) = \pi^2/6$$

If $Z'(S) = 0$ Theorem and Formula 143, will be :

$$Z(S) = \pi^2/6$$

We have: $Z(S) = 1/1^s + 1/2^s + 1/3^s + 1/4^s + 1/5^s + 1/6^s + 1/7^s + \ldots\ldots\ldots\ldots$

And we have: $\pi^2/6 = 1/1^2 + 1/2^2 + 1/3^2 + 1/4^2 + 1/5^2 + 1/6^2 + 1/7^2 + \ldots\ldots\ldots\ldots$

Therefore: $1/1^s + 1/2^s + 1/3^s + 1/4^s + 1/5^s + \ldots.. = 1/1^2 + 1/2^2 + 1/3^2 + 1/4^2 + 1/5^2 + \ldots..$

As a result $S = 2$

So if $Z'(S) = 0$ Then $S = 2$

So 2 is a trivial zero of New Zeta Function $Z'(S)$

So, we are going to follow the same way that mathematicians have followed to prove that :

4 , 6 , 8 , 10 , 12 , 14 , 16 , 20 , 22 , 24 ,…………., 2N are trivial zeros of New Zeta Function $Z'(S)$

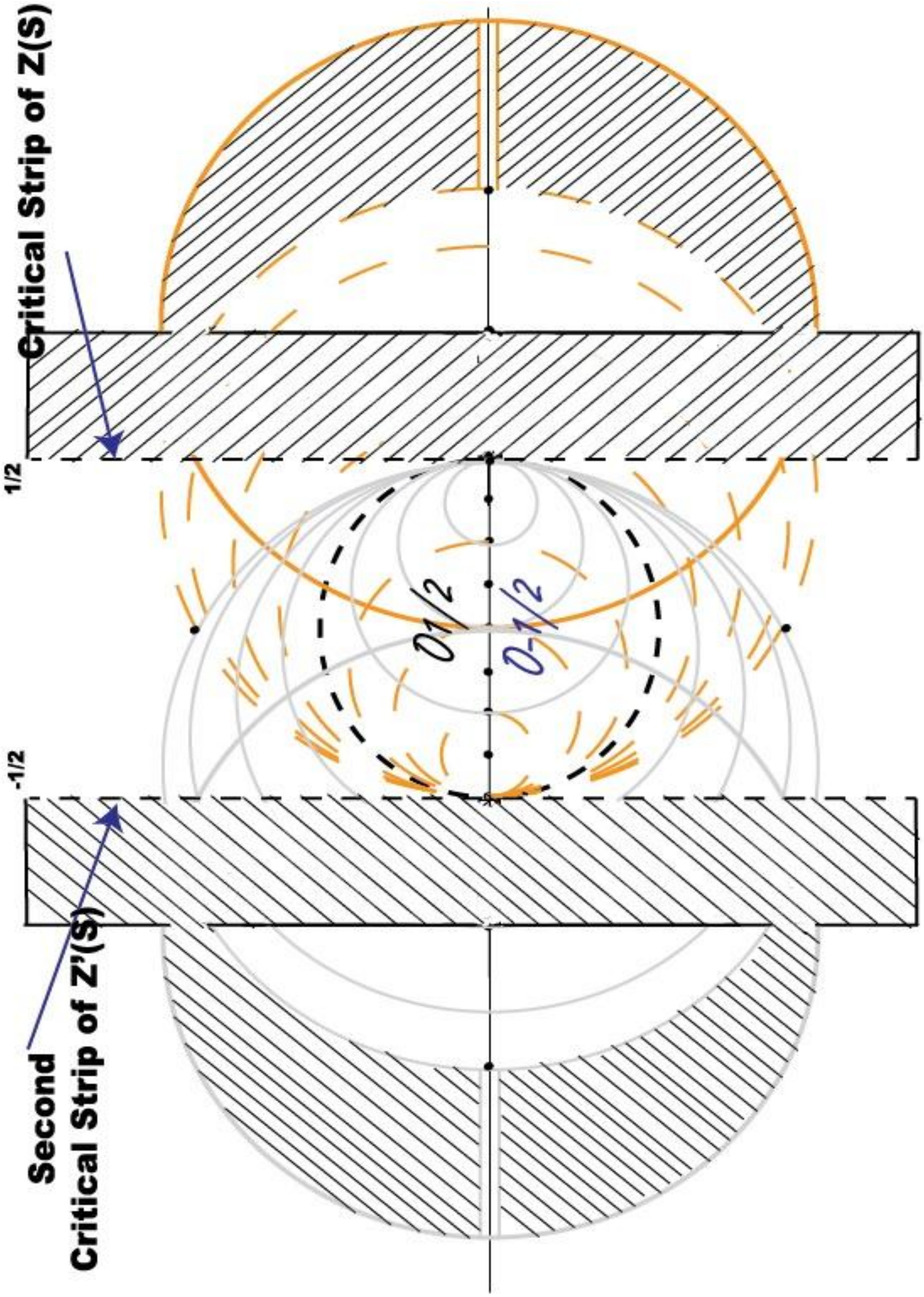
As a conclusion:

The trivial zeros of Riemann Zeta function Z(S) are : -2 , -4 , -6 , -8 , -10 , …………, -2N

The trivial zeros of New Zeta function Z'(S) are : 2 , 4 , 6 , 8 , 10 , …………, 2N

**** The function Z(S),hence Re(S)∈[0 ,1[,and the function Z'(S)=Z(-S),hence Re(S)∈]-1 ,0]**

1) The representation of complex numbers in New complex plane that their real part belongs to]-1 ,0]U[0 ,1[: Re(S)∈ [0 ,1[and Re(S)∈]-1 ,0]:



In New Complex Plane , if the real part of complex numbers that belongs to : Re(S) ∈] -1 , 0] U[0 , 1[, then these complex numbers meet and intersect in 0^+ or 0^- ,we say that they intersect in 0

We have :

$Z(S)= \sum_{n=1}^{+\infty} 1/n^s = 1/1^s +1/2^s +1/3^s +1/4^s +1/5^s +1/6^s +1/7^s +$…………………

And we have :

$Z'(S) = Z(-S) = \sum_{n=1}^{+\infty} 1/n^{-s} = \sum_{n=1}^{+\infty} n^s = 1^s + 2^s + 3^s + 4^s + 5^s + 6^s + 7^s +$…………………

We have :

$Z(1/2)= 1/1^{1/2} +1/2^{1/2} +1/3^{1/2} +1/4^{1/2} +1/5^{1/2} +1/6^{1/2} +1/7^{1/2} +$……

Then :

$Z(1/2)= 1 +1/\sqrt{2} +1/\sqrt{3} +1/\sqrt{4} +1/\sqrt{5} +1/\sqrt{6} +1/\sqrt{7} +$……

We have :

$Z'(-1/2) = 1^{-1/2} + 2^{-1/2} + 3^{-1/2} + 4^{-1/2} + 5^{-1/2} + 6^{-1/2} + 7^{-1/2} +$……

Then :

$Z'(-1/2) = 1 +1/\sqrt{2} +1/\sqrt{3} +1/\sqrt{4} +1/\sqrt{5} +1/\sqrt{6} +1/\sqrt{7} +$……

Therefore: $Z(1/2)= Z'(-1/2)$

We have : $Z(-1/2)= 1/1^{-1/2} +1/2^{-1/2} +1/3^{-1/2} +1/4^{-1/2} +1/5^{-1/2} +1/6^{-1/2} +1/7^{-1/2} +$……

As a result : $Z(-1/2)= 1^{1/2} + 2^{1/2} + 3^{1/2} + 4^{1/2} + 5^{1/2} + 6^{1/2} + 7^{1/2} +$……

Then : $Z(-1/2)= 1 + \sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{5} + \sqrt{6} + \sqrt{7} +$……

We have : $Z'(1/2) = 1^{1/2} + 2^{1/2} + 3^{1/2} + 4^{1/2} + 5^{1/2} + 6^{1/2} + 7^{1/2} +$……

Then : $Z'(1/2) = 1 + \sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{5} + \sqrt{6} + \sqrt{7} +$……

Therefore: $Z(-1/2) = Z'(1/2)$

As a conclusion:

$Z(1/2)= Z'(-1/2)$ And $Z(-1/2) = Z'(1/2)$

* Theorem and Riemann Hypothesis Proof:

We have : $Z(S) = 1+ 1/2^s +1/3^s +1/4^s +1/5^s +1/6^s +1/7^s +............$

And we have the first non trivial zero of Zeta function is $S_0 = 1/2 + 14,135i$ when $Z(S_0) = 0$

Using Method and Formula 143 , we have:

$\forall\ S \in \mathbb{C}$ $\quad Z(S) + Z'(S) = \pi^2/6$,Hence : $Z'(S) = Z(-S)$

***The Riemann hypothesis will be true when 1 is true <u>or</u> when 2 is true**

1 If all complex numbers that satisfy $Z(S) = 0$ implies that $Re(S) = 1/2$

$$\forall\ S \in \mathbb{C} \quad Z(S) = 0 \Longrightarrow Re(S) = 1/2 \quad , S = 1/2 + ib$$

2 The Riemann hypothesis will be true when a is true <u>and</u> b is true

a If we introduce all complex numbers that their real numbers belong to]0 ,1/2[U]1/2 , 1[in Formula 143,

and we get as a result a complex number that its real number is unequal to 1/2 this means :

$$II \quad \forall\ S_{input} \in \mathbb{C}\ ,\ S_{input} = a/c + ib\ \ , \text{hence}\ \ a/c \in\ ]0 ,1/2[\ U\ ]1/2 , 1[$$

$$II \Longrightarrow S_{output} = a'/c' + ib'\ ,\ Re(S_{output}) \neq Re(S_0) = 1/2$$

b There exists a complex number that its real part is equal to 1/2 :

$$\exists\ S \in \mathbb{C}\ \ , S= 1/2 +ib\ , \text{hence}\ \ Z(1/2 +ib) = 0 \Longrightarrow S = S_0$$

S_0 one of the non trivial zero of Riemann Zeta Function

***The Riemann hypothesis will be wrong when 3 is wrong <u>or</u> when 4 is wrong**

3 There exists a complex number S , hence is $Z(S) = 0$, $Re(S) \neq 1/2$:

$$\exists\ S \in \mathbb{C}\ \ , Z(S) = 0 \Longrightarrow Re(S) \neq 1/2$$

4 There exists a complex number S_{input} that its real part $Re(S_{intput})$ belongs to **]0 ,1/2[U]1/2 , 1[, $S_{input} = a/c + ib$**

hence if we introduce S_{input} in Formula 143 , we get as a result:

$S_{output} = a'/c' + ib'\ ,\ Re(S_{output})= Re(S_0) = 1/2$ this means :

$$\boldsymbol{\exists\ S_{input} \in \mathbb{C}\ ,Re(S_{intput}) \in\ ]0 ,1/2[\ U\ ]1/2 , 1[\Longrightarrow S_{output} = a'/c' + ib'\ ,\ Re(S_{output})= 1/2}$$

*So to prove that The Riemann Zeta function is true , we are going to use the condition 2

Let us prove that the condition a is true:

Using Theorem and Formula 143, we have:

$$Z(S) + Z'(S) = \prod^2/6$$

We have: $S_1 = a/c + ib$, hence $a/c \in]0 ,1/2[\cup]1/2 , 1[$

Using Theorem and Formula 143, we will get:

$$Z(S_1) + Z'(S_1) = \prod^2/6$$

$(1+(1/2^{(a/c+ib)})+(1/3^{(a/c+ib)})+(1/4^{(a/c+ib)})+(1/5^{(a/c+ib)})+\ldots) + (1+(1/2^{-(a/c+ib)})+(1/3^{-(a/c+ib)})+(1/4^{-(a/c+ib)})+(1/5^{-(a/c+ib)})+\ldots) = \prod^2/6$

Then :

$$1+(1/2^{(a/c+ib)})+(1/3^{(a/c+ib)})+(1/4^{(a/c+ib)})+(1/5^{(a/c+ib)})+\ldots\ldots = Z(S)$$

And

$$1+(1/2^{-(a/c+ib)})+(1/3^{-(a/c+ib)})+(1/4^{-(a/c+ib)})+(1/5^{-(a/c+ib)})+\ldots\ldots = Z'(S)$$

Therefore :

$$1+(1/2^{(a/c+ib)})+(1/3^{(a/c+ib)})+(1/4^{(a/c+ib)})+(1/5^{(a/c+ib)})+\ldots.. = 1+ 1/2^s +1/3^s +1/4^s +1/5^s +\ldots$$

And

$$1+(1/2^{-(a/c+ib)})+(1/3^{-(a/c+ib)})+(1/4^{-(a/c+ib)})+(1/5^{-(a/c+ib)})+\ldots.. = 1+ 1/2^{-s} +1/3^{-s} +1/4^{-s} +1/5^{-s} +\ldots$$

Let us take for example $S_1 = 1/3 + ib$, hence $1/3 \in]0 ,1/2[\cup]1/2 , 1[$

Then :

$$1+(1/2^{(1/3+ib)})+(1/3^{(1/3+ib)})+(1/4^{(1/3+ib)})+(1/5^{(1/3+ib)})+\ldots.. = 1+ 1/2^s +1/3^s +1/4^s +1/5^s +\ldots$$

And

$$1+(1/2^{-(1/3+ib)})+(1/3^{-(1/3+ib)})+(1/4^{-(1/3+ib)})+(1/5^{-(1/3+ib)})+\ldots.. = 1+ 1/2^{-s} +1/3^{-s} +1/4^{-s} +1/5^{-s} +\ldots$$

Let us calculate the value of S when Z(S) = 0

If Z(S) = 0 this implies that :

$$1+(1/2^{(1/3+ib)})+(1/3^{(1/3+ib)})+(1/4^{(1/3+ib)})+(1/5^{(1/3+ib)})+\ldots= 1+ 1/2^s +1/3^s +1/4^s +1/5^s +\ldots= Z(S) = 0$$

Therefore:

$$1+(1/2^{-(1/3+ib)})+(1/3^{-(1/3+ib)})+(1/4^{-(1/3+ib)})+(1/5^{-(1/3+ib)})+\ldots.. = 1+ 1/2^{-s} +1/3^{-s} +1/4^{-s} +1/5^{-s} +\ldots$$

As a conclusion : $S_{output} = 1/3 + ib$, Hence $1/3 \neq Re(S_0)= 1/2$

Let us repeat the same operation with all complex numbers that their real parts belongs to]0 ,1/2[U]1/2 , 1[

Re(S) ∊]0 ,1/2[U]1/2 , 1[, we will get as a result : $Re(S_{output}) \neq 1/2$

$\forall\, S_{input} \in \mathbb{C}$ **,Re(S_{intput}) ∊]0 ,1/2[U]1/2 , 1[** $\Longrightarrow$ **Re(S_{output})** $\neq Re(S_0)= 1/2$

As a conclusion the condition a is satisfied

Remark:

This condition a is satisfied even if Re(S) ∊ [1 , +∞[this means that :

$\forall\, S_{input} \in \mathbb{C}$ **,Re(S_{intput}) ∊ [1 , +∞[** $\Longrightarrow$ **Re(S_{output})** $= Re(S_0) \neq 1/2$

***Let us prove that the condition b is true:**

Let $S_1 = 1/2 +14,135i$, hence $Re(S_1) = 1/2$

Using Theorem and Formula 143, we will get:

$$Z(S_1) + Z'(S_1) = \prod^2/6$$

Then :

$1+(1/2^{(1/2 +14,135i)})+(1/3^{(1/2 +14,135i)})+(1/4^{(1/2 +14,135i)})+(1/5^{(1/2 +14,135i)})+\ldots= 1+ 1/2^s +1/3^s +1/4^s +1/5^s +\ldots$

And

$1+(1/2^{-(1/2 +14,135i)})+(1/3^{-(1/2 +14,135i)})+(1/4^{-(1/2 +14,135i)})+(1/5^{-(1/2 +14,135i)})+\ldots= 1+ 1/2^{-s} +1/3^{-s} +1/4^{-s} +1/5^{-s} +\ldots$

Let us calculate the value of S when Z(S) = 0

If Z(S) = 0 this implies that :

$1+(1/2^{(1/2 +14,135i)})+(1/3^{(1/2 +14,135i)})+(1/4^{(1/2 +14,135i)})+(1/5^{(1/2 +14,135i)})+\ldots=1+ 1/2^s +1/3^s +1/4^s +1/5^s +\ldots=Z(0)=0$

Therefore:

$1+(1/2^{-(1/2 +14,135i)})+(1/3^{-(1/2 +14,135i)})+(1/4^{-(1/2 +14,135i)})+(1/5^{-(1/2 +14,135i)})+\ldots= 1+ 1/2^{-s} +1/3^{-s} +1/4^{-s} +1/5^{-s} +\ldots$

As a conclusion:

$\mathbf{S_{output} = 1/2 + 14,135i = S_0}$, Hence **Re(S_{output})** $= Re(S_0)= 1/2$

Therefore the condition b is satisfied

As a result the Riemann hypothesis is true

Therefore using this Theorem , we prove that:

$$\forall\, S \in \mathbb{C} \quad , Z(S) = 0 \Longrightarrow S = 1/2 +ib$$

Following the same manner and method , we prove that:

$$\forall S \in \mathbb{C} \quad , Z'(S) = Z(-S) = 0 \Longrightarrow \quad S = -1/2 + ib$$

***Theorem and Riemann Hypothesis Proof

This Theorem is here to prove 2 hypothesis :

-The well known hypothesis that is Riemann hypothesis:

This Theorem states that :

$$\forall S \in \mathbb{C} \quad , Z(S) = 0 \Longrightarrow \quad S = 1/2 + ib$$

-New hypothesis :

This Theorem states that :

$$\forall S \in \mathbb{C} \quad , Z'(S) = 0 \Longrightarrow \quad S = -1/2 + ib$$

We arrive to prove one of the most enigmatic and significant conundrums in the world of numbers that has tantalized and challenged some of the brightest minds for over a century, and we open the door to the new and modern mathematics that break postulate and axioms ,this theorem will also open the door in many other fields in physics in natural science , and space , this will help to know the universe with accuracy.

and we arrive to open new door that has never been opened before and this can help to understand the universe and mathematics and all sciences and resolve complicated problems , and to understand many other phenomenon in different areas especially in Quantum physic .

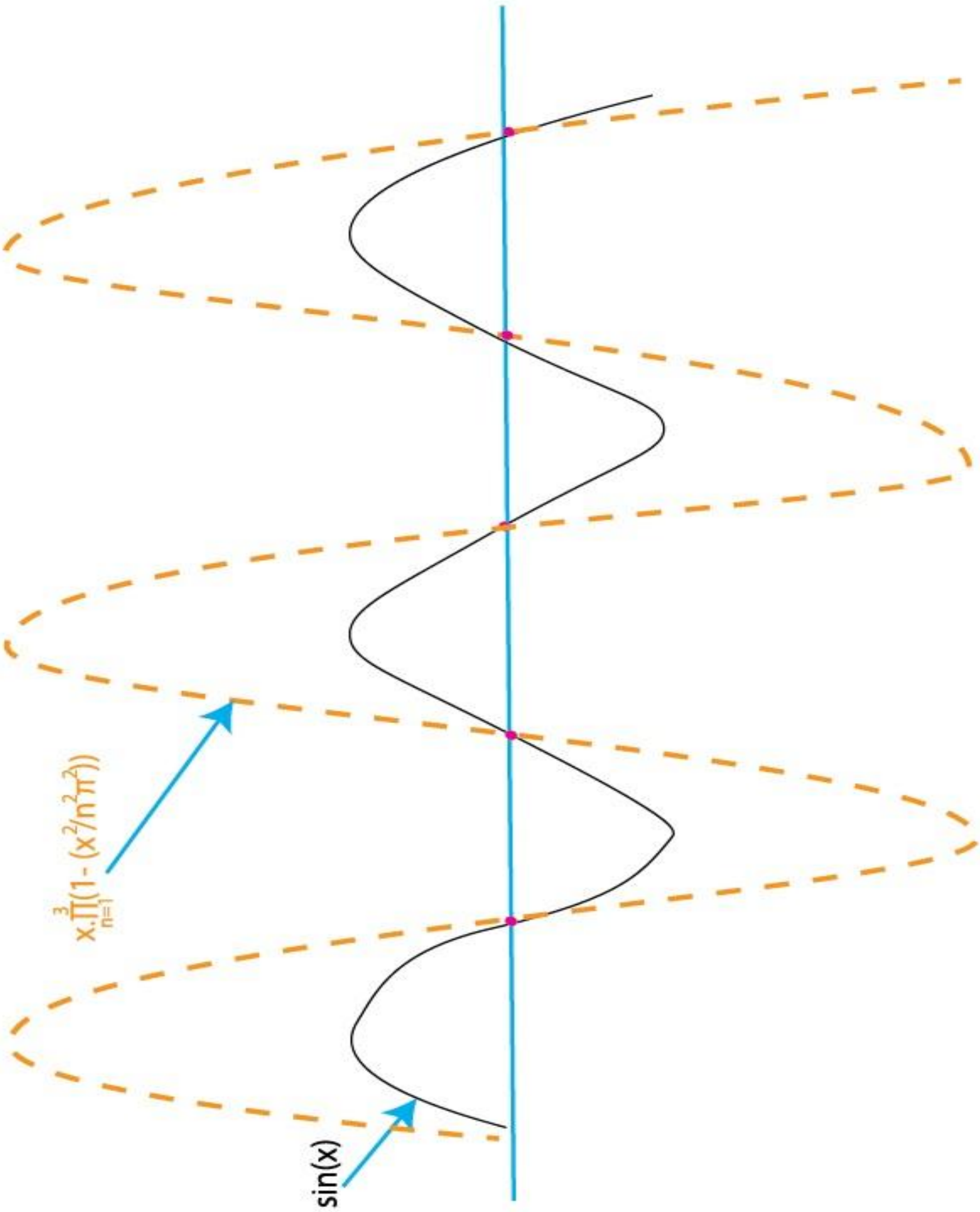
Remark:

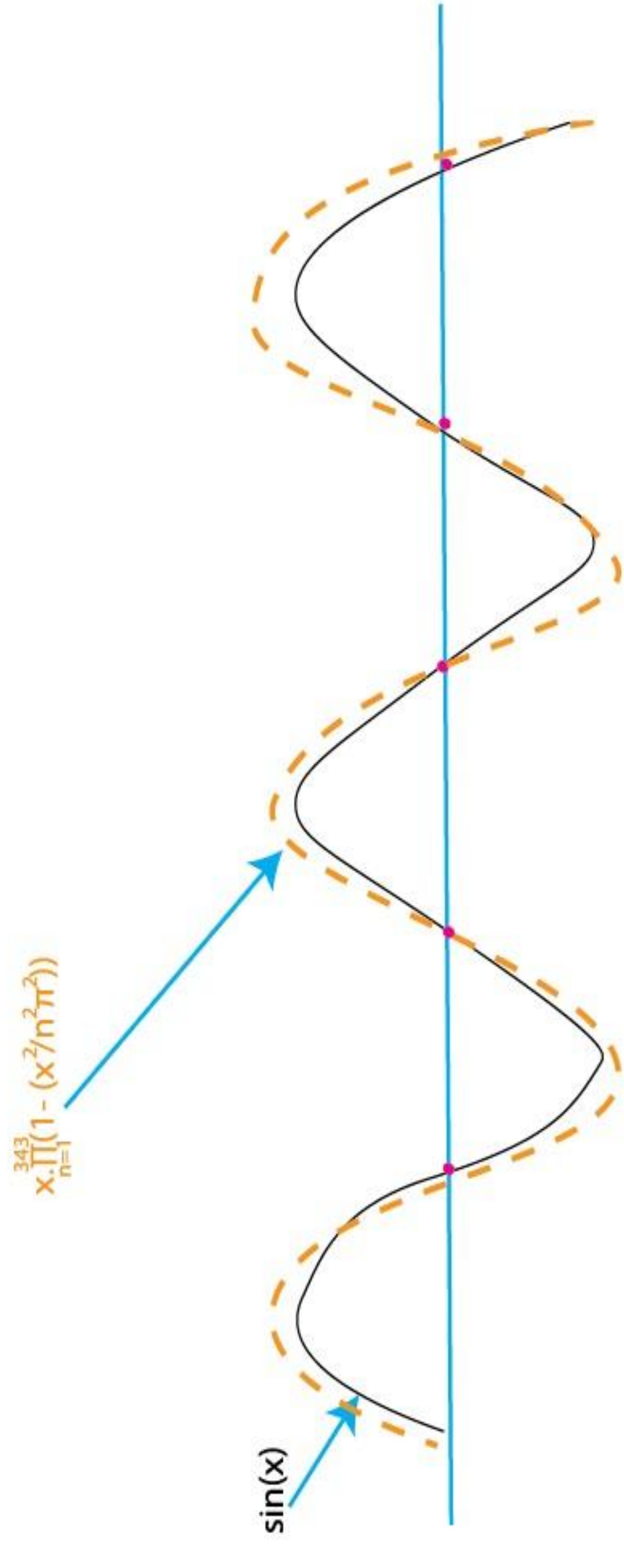
we have

$$\sin(x) = x \times \prod_{n=1}^{\infty}\left(1 - \frac{x^2}{n^2\pi^2}\right)$$

$$\sin(x) = x\left(1 - \frac{x^2}{\pi^2}\right)\left(1 - \frac{x^2}{4\pi^2}\right)\left(1 - \frac{x^2}{9\pi^2}\right)\left(1 - \frac{x^2}{16\pi^2}\right)\left(1 - \frac{x^2}{25\pi^2}\right)\ldots$$

As long as n increases without bound, and approaches infinity, the function graph will be similar to Sine function graph sin(x)

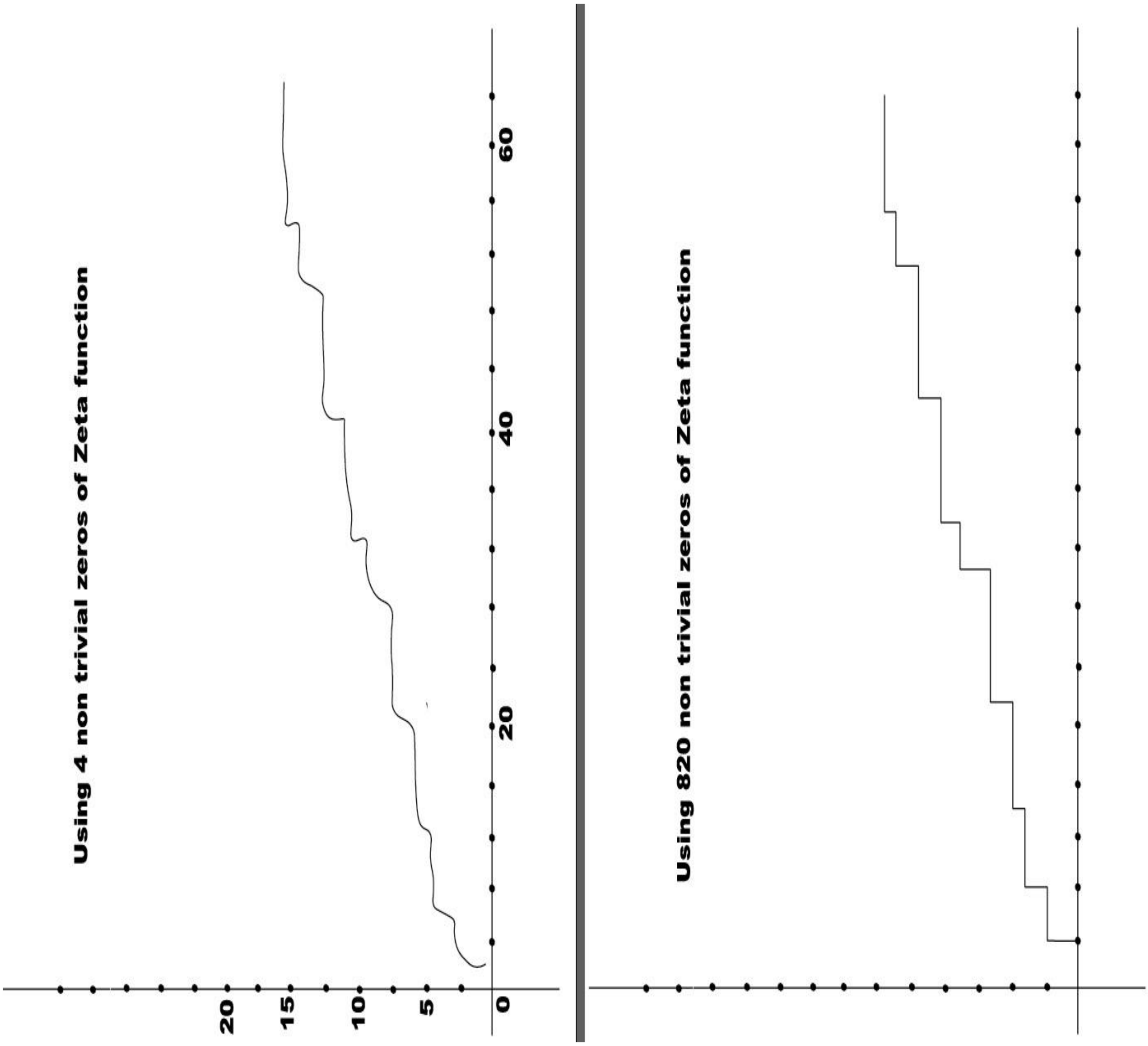



$x.\prod_{n=1}^{343}(1 - (x^2/n^2\pi^2))$
sin(x)

Using Theorem and Formula 143 , we have :

$$Z(S_1) + Z'(S_1) = \prod^2/6$$

As long as we use more non trivial zeros of Zeta function, The Riemann Prime numbers function approaches Gauss Prime numbers function as defined by Gauss.



Conclusion: as long as we use more non trivial zeros of Zeta function, we approach the Gauss Prime numbers function, and as long as n increases in the previous function, we approach Sine function sin(x) which means that there is a relationship.

And the distribution of prime numbers is well controlled, and prime numbers are distributed as regularly as they can possibly be. There is a certain amount of noise that is extremely will controlled

CONTENTS

INTRODUCTION TO MATHEMATICS 1

CHAPTER 1

CHAPTER 2

GENERAL FORMULAS

PART 1:GENERAL FORMULAS 1

CHAPTER 3

CHAPTER 4

CHAPTER 5

CHAPTER 6

CHAPTER 7

CHAPTER 8

CHAPTER 9

CHAPTER 10

CHAPTER 13

CHAPTER 14

CHAPTER 15

CHAPTER 16

CHAPTER 17

CHAPTER 18

CHAPTER 19

CHAPTER 20

CHAPTER 21

CHAPTER 22

CHAPTER 23

CHAPTER 24

CHAPTER 25

CHAPTER 26

CHAPTER 27

CHAPTER 28

CHAPTER 29