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To Find The Sum Of All Real Numbers Exists In Between Two Consecutive Natural Numbers)

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Abstract:→

The real number system is continuous containing infinitely many elements between any two distinct real values. This paper investigates the theoretical concept of summing out real number that lie Strictly between two consecutive natural number. The work explains theoretical implications for continuity, measurement and real number behaviours in mathmatics.

Keywords:-

Real numbers, Natural numbers, consecutive integers, Infinite set,Uncountability, continuity, Density, unit interval, Number theory, Real analysis.

* Introduction:-

The real number line contains infinitely many
Values between any two consecutive natural
numbers, forming a continuous and uncountable set . uncountably infinite
sets do not follow conventional summation rules.

This research focuses on analysing this interval
mathematically and determining the meaningful interpretation of the
"sum" of all real numbers between two consecutive natural numbers.
This clarifies fundamental misconceptions about
infinite sets and contributes to a deeper understanding of real number
behaviour in continuous spaces.

*Literature Review:-
The study of real numbers and their distribution
Within an interval has been widely explored in mathematical analysis.
These contributions demonstrate that the real
numbers between any two natural numbers form a continuum rather
than a
discrete collection.

This body of literature suppo;s the conceptual
basis for evaluating the sum of real numbers between consecutive
natural number.

Mathematics research paper

*Methodology:-
Let's see the sum of all rational and irrational
numbers from 2 to 3, and sum of all real numbers exist in between two
natural number:-

We know that:

1)2.1+2.2+2.3+...+2.9 = 22.5 –①

2)2.01+2.02+2.03+...+2.99=247.5 --②

3)2.001+2.002+2.003+...+2.999=2497.5 –③

4)2.0001+2.0002+2.0003+...+2.9999=24997.5 --④

5)2.00001+2.00002+2.00003+...+2.99999=249997.5 –⑤

6)2.000001+2.000002+2.000003+...+2.999999=2499997.5 –⑥

But this process takes a long time to determine

the benefits we took Sho; process by apply this formula.

This formula is

Sn = n/2 (a+l)

In the above equation

Sn = Sum of n numbers

a = First Number

n = Numbers of terms in the equation

l = End term

If this equation this formula apply.

2.001+2.002+2.003+...+2.999=2497.5

Where a=2.001

l=2.999

Sn=n/2 (a+l) = 999/2 (2.001+2.999) = 999/2 x 5 = 2497.5

This can be easily formulate in sequence using the

formula given by me.

Therefore, the sum of all the real numbers from 2 to 3 in the nth term is : -

24(n-2) times 97.5 (n>=3) when n is natural Number

So we can say

The sum of all real numbers from 3 to 4 in the nth term will be :- 34 (n-2) times 6.5 (n>=3) when n is a natural Number

*Method of deriving equations:-

*If you look at the equation for real numbers adding from 2 to 3, you will notice that In equation and fu;her on when determine the sum, the first number always sta; with 2.

ex :

1)2.1+2.2+…. +2.9 = 22.5

2)2.01+2.02+..... +2.99 = 247.5

3)2.001+2.002+… +2.999 = 2497.5

*The second term a6er equation number 2 and with in equation 2 itself sta;s with 4.

ex 2) 2.01+2.02+… +2.99 = 247.5

3) 2.001 +2.002+… +2.999= 2497.5

4) 2.0001+2.0002+… +2.9999= 24997.5

*The third term In equation number 3 to all subsequent equation numbers must contain the number 9.

ex:3) 2.001 + 2.002+2.003… +2.999 = 2497.5

4) 2.0001+2.0002+2.0003+..... +2.9999 = 24997.5

5) 2.00001+2.00002+2.00003+..... +2.99999 = 249997.5

*The frequency of this number 9 depends on the equation number.

In equation 3 the 9 digits is 3-2 = 1 times equation 4 the 9 digits is 4-2 = 2 times

equation 5 the 9 digits is 5-2 = 3 times

* There must be single digit 5 a6er the decimal point in all equation.

1)2.1+2.2+2.3+..................+2.9 = 22.5 - ①

2)2.01+2.02+2.03+..................+2.99 = 247.5 - ②

3)2.001+2.002+2.003+..............+2.999 = 2497.5 - ③

* In all equations numbers let's saw from adding 2

to 3 all real number 7 is repeated in all equation from 2 to all sequences.

2)2.01+2.02+2.03+..................+2.99 = 247.5 - ②

3)2.001+2.002+2.003+..............+2.999 = 2497.5 - ③

4)2.0001+2.0002+2.0003+.............+2.9999 = 24997.5 - ④

* Adding 3 to 4 all real number 6 is repeated in all

equation from 2 to all sequences.

2)3.01+3.02+3.03+..................+3.99 = 346.5 - ②

3)3.001+3.002+3.003+..............+3.999 = 3496.5 - ③

* In all equations except number 1, the ratio of the

two Series number will be the same

In equation ②

2.01+2.02+2.03+..................+2.99 = 247.5

equation③ - 2.001+2.002+2.003+..............+2.999 = 2497.5 - ③

equation④ - 2.0001+2.0002+2.0003+.............+2.9999 = 24997.5 - ④

ratio of eq③/ eq② = 2497.5 /247.5= 10.090909090909

ratio of eq④/eq③ = 24997.5 /2497.5= 10.090909090909

These formula apply In case of sum of real
number exist in between 2 to 3, 3 to 4, 4 to 5.

These fore. The formula given based on this
information is x4(n-2) times 9 y.5(n >= 3) and n is
a natural number. (Adding real number from any two consecutive
number)

This formula is valid only for two consecutive number.

*The formula for determining the value of x and y:

* Determine the value of x:-

*For the sum of all real number exist in between
2 to 3 is x = 2.

* For the sum of all real number exist in between
3 to 4 is x = 3.

- for the sum of all real number exist in between
n to n+1 is x = n.

* Determine the value of y (n+y = 9): formula

- For the sum of all real number exist in between
2 to 3 y = 7 where n = 2.

- for the sum of all real number exist in between
3 to 4 y = 6 where n = 3.

- For the sum of all real number exist in between
n to n+1 y = 9-n when n = n.

This formula is valid for only single digits number.
It is not valid for double digits number. But many
of the rules of the original system will apply here.

*For sum of real number in between n to n+1 x=n.
*There must be single digit 5 a6er the decimal point in all equation.
*The Frequency of this number 9 depends on the equation number.

*How to calculate the sum of all real number in
between any natural number (Valid for all Integers)

The Formula is as well
from n to n+1 where n. should be any natural number
gives making equation serial wise
1) n.1+ n.2 +...+ n.9 = ____ (1)
2) n.01+n.02+... + n.99 = ____ (2)
3)n.001+n.002+... + n.999 = ____ (3)

*This process begin till in between the sum of this
number Single digit 9 appears and then we stop and form all equation
a6er this repeatation of 9 occurs.

This is the easiest way to find the sum of all real number exist between
two natural number.

*In three digit number sum we take 9 appears and It repeat 2 to 3 times.
Then fu;her equation ongoing In all equation digit 9 always appearing.

*Find the sum of all real number in two digit number:-

*Let's see in 11 to 12 (Addition of all real number and find equation)

1) 11.1 +11.2 + ... +11.9 = 103.5

2)11.01+11.02+ ... +11.99 = 1138.5

3)11.001+11.002+ ... +11.999 = 11488.5

4)11.0001+11.0002+ ... +11.9999 = 114988.5

9 Single digit is appears in this equation we stop and fu;her begin.

5)11.00001+11.00002 + ... +11.99999 = 1149988.5

6)11.000001+11.000002 + ... +11.999999 - 11499988-5

we say that the sum of series when we take 11 to 12 is Answer: - 114(n-3) times 988.5.

*Let's see in 101 to 102 (Addition of three digit number for find the final equation for series)

1) 101.1 +101.2 + ... +101.9 = 913.5

2)101.01 +101.02+ ... +101.99 = 10048.5

3)101.001 +101.002+ ... +101.999 = 101498.5

4)101.0001 +101.0002+ ... +101.9999 = 1014898.5

5)101.00001 +101.00002+ ... +101.99999 = 10149898-5

6)101.000001+101.000002 +... +101.999999 = 101499898.5

7)101.0000001 +101.0000002 +... + 101.9999999 = 1014999898.5

we say that the sum of series when we take lol to 102 is.

Answer:- 1014(n-4) times 9898.5

*Results and Discussion:-

Using the analytical method described, the research successfully determines a meaningful representation of the "sum" of all real numbers between two consecutive natural numbers.

This rule and equations of series I quoted can be easily applied to this process. This suppo;s the use of modern analytical tools for interpreting infinite and continuous sets and validates the approach used in the study.

*Conclusion:-

This research set out to determine the meaningful interpretation of the "sum" of all real numbers that exist between two consecutive natural number

The study demonstrates a valid process for how to find this series and in last to find the equation.

The findings contribute to a deeper understanding of Continuous number systems and provide a foundation for fu;her mathematical exploration involving infinite and uncountable structures.

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