The Infinite Sum Series

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Abstract: The motive of this paper is to put forward a new approach to find the value of infinite sum series, given by S = (1+2+3+4+5+6-----) and to show that, the series converges at the value equal to zero.

Keywords: Infinite sum series, Ramanujan summation

Introduction: The infinite sum series is the sum of all natural numbers starting from one to infinity, and the value of this series was first proposed by S.Ramanujan, in a notebook he couriered to G.H.Hardy, in 1913, in which he showed that the sum converges to the value equal to -1/12 and called it Ramanujan Summation. However, in this paper, I tried to take a different approach for the same problem, and the result discovered is completely different from the value derived by Dr. Ramanujan more than 100 years ago.

Let us consider the infinite sum series given by S

S = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 +9 + 10 + -------

= 1 + (1+1) + (1+2) + (1+3) + (1+4) + (1+5) + ----

Let us take all the 1's in the brackets on to the one side while leaving the rest on the other side, it yields,

S = (1 + 1 + 1 +1 +1 +1 +-----) + (1 + 2 + 3 + 4 + 5 + 6 + ----)

= [1 + (1+1) + (1+1+1) + (1+1+1+1) + (1+1+1+1+1) +----] + (1 + 2 + 3 + 4 + 5 + ----)

= (1 + 2 + 3 + 4 + 5 + 6 + ----) + (1 + 2 + 3 + 4 + 5 + 6 + ----)

= S + S

S = 2S

2S - S = 0

S = 0

Conclusion: With the above mathematical expression, It can be clearly seen that the sum of the infinite series converges at the number “0”.

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