PartialSum Tivenan.pdf

Stephen Tivenan

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1 Answer to Questions

The partial sum term that I created was $a_n = \sum_{n=1}^{10000} \frac{1}{n^4} = 1.08232323$. The first infinite series, s_n converges to 93500. The second infinite series t_n, diverges. The series s_n converges because after calculating $1,000,000$ terms the increase in the sum is very small and seems to be approaching 93500. This would indicate that the has reaching its limit. The series t_n diverges because after 10,000 terms the infinite series increases dramatically and looks as if their is no bound. I used in $10,0000$ terms in t_n and a_n to predict whether if the series converged or not. I used $10,000$ and $1,000,000$ terms because I believe the n value was big enough to indicate whether the series might converge or not. The values I choose would be a good indicator of what might happen as the infinite series approaches infinity because the numbers were big enough to have an impact on the denominator and the numerator. Where in this case $\ln(x)$ and $x^{-1/2}$ are slow diverging infinite series individually.

$$\star \quad s_n = \sum_{i=1}^{n} \frac{\ln(i^4 + i + 3)}{\sqrt{i} + 3}$$

$$\star \quad t_n = \sum_{i=1}^{n} \frac{e^{i/100}}{i^{10}}$$

Figure 1: The Infinite series