

Ma1023 Quiz 4 B

Calculus III

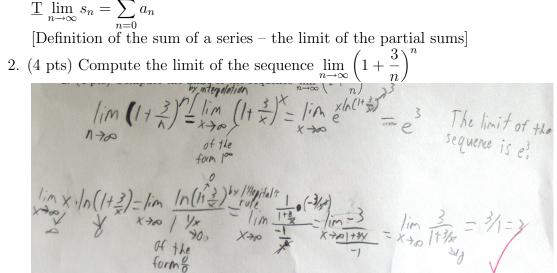
1. (2 pts) Let $\{a_k\}_{k=0}^{\infty}$ be an infinite sequence of positive terms and let $s_n = \sum_{k=0}^{n} a_k$ be its sequence of partial sums. Label the following as \mathbf{T} for TRUE or \mathbf{F} for FALSE or \mathbf{X} if it cannot be determined from the given information.

Print Name:

<u>X</u> The sequence $\{a_k\}$ is monotonically increasing.

[But we can conclude s_n is monotonically increasing.

$$\underline{\mathrm{T}}\lim_{n\to\infty}s_n = \sum_{\substack{n=0\\ n\to\infty}}^{\infty}a_n$$



Thanks to Shawn Wile

3. (3 pts) Determine whether or not the following infinite series is geometric, determine whether it converges, and if so, find its sum.

$$\begin{split} \sum_{n=3}^{\infty} \frac{(-1)^{k+1} 2^{3k+1}}{3^{2n-1}} \\ Ratro & \frac{a_{k+1}}{a_{k}} = \left(\frac{(-1)^{k+2} 2^{3(k+1)+1}}{3^{2(k+1)-1}} \right) = \frac{(-1)(2^{3}}{3^{2}} = -\frac{5}{9} \\ & \text{ Does not depend on } \\ & \frac{(-1)^{k+1} 2^{3k+1}}{2^{2k+1}} \\ & \text{ The series is convergent for a } \\ & \frac{(-1)^{k+2} 2^{3k+1}}{2^{2k-1}} \\ & Ratro & \frac{a_{k+1}}{a_{k}} = \frac{2^{16}}{3^{5}} \\ & Ratro & \frac{(-1)^{k+2} 2^{3(k+1)+1}}{3^{2}} = -\frac{5}{9} \\ & Ratro & \frac{1}{9} + \frac{1}{9} \\ & Ratro & \frac{a_{k+1}}{2^{2k+1}} = \frac{2^{16}}{3^{5}} \\ & Ratro & \frac{(-1)(2^{3}}{3^{2}} = -\frac{5}{9} \\ & Ratro & \frac{1}{9} + \frac{1}{9} \\ & Ratro & \frac{(-1)(2^{3}}{3^{2}} = -\frac{5}{9} \\ & Ratro & \frac{(-1)(2^{3})(2^{3})}{2^{2}} = -\frac{5}{9} \\ & Ratro & \frac{(-1)(2^{3})(2^{3})(2^{3})}{2^{2}} = -\frac{5}{9} \\ & Ratro & \frac{(-1)(2^{3})(2^{3}$$

Thanks to Yutong Li