Worcester Polytechnic Institute   Fall 2020 - A Term
Department of Mathematical Sciences
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MA 1023
Calculus III

Conference 3 − Ideas
Covers material from Lecture 6-6
& Active Learning 3

1. Using the integral test, what can you say about convergence or divergence of the following series?

$$\text{a)} \quad \sum_{n=1}^{\infty} \frac{\ln(n)}{n^2} \qquad\qquad \text{b)} \quad \sum_{n=1}^{\infty} \frac{5n^4}{(n^5 + 17)^2}$$

2. You try to approximate the p-series

$$\sum_{n=1}^{\infty} \frac{1}{n^5}$$

by summing up the first 100 terms of the series. How accurate is your approximation? You can use the idea of the integral test to find this out.

3. Using the n-term test, what can you say about convergence or divergence of the following series?

$$\text{a)} \quad \sum_{n=1}^{\infty} \frac{n^3 - 2n + 4}{n^2 + n - 1} \qquad\qquad \text{b)} \quad \sum_{n=1}^{\infty} \frac{1 - (-1)^n}{n}$$

4. Calculate the values of the following series if they converge

$$\text{a)} \quad \sum_{n=1}^{\infty} \frac{(-9)^n}{3^{2n}} \qquad\qquad \text{b)} \quad \sum_{n=2}^{\infty} (-1)^{n+1} \frac{4^{2n}}{3^{5n-2}}$$