

10.3 The n th Term Test for Divergence

Calculus

Name: _____

1. The n th-Term Test can be used to determine divergence for which of the following series?

I. $\sum_{n=1}^{\infty} \frac{(n+1)^3}{3n^3 - 2n + 1}$

II. $\sum_{n=1}^{\infty} \frac{(n+1)^2}{2n^2 - 3n^3 + 1}$

III. $\sum_{n=1}^{\infty} \ln \frac{1}{n}$

- A. III only
- B. I and III only
- C. II and III only
- D. I, II, and III

Use the n th-Term Test for Divergence to determine if the series diverges.

2. $\sum_{n=0}^{\infty} \frac{\pi^{n+1}}{7^n}$

3. $\sum_{n=1}^{\infty} \frac{2(n-2)^2}{3(n+4)^2}$

4. $\sum_{n=1}^{\infty} \frac{1}{e^n}$

5. Verify that the infinite series $\sum_{n=1}^{\infty} \frac{6^n + 1}{6^{n+1}}$ diverges by using the n th-Term Test for Divergence. Show the value of the limit.

1. B	2. Converges, Geometric Series, $r = \frac{7}{\pi}$	3. Diverges by n -th-Term Test, $\lim_{n \rightarrow \infty} a_n = \frac{2}{3}$	4. Converges, Geometric Series, $r = \frac{1}{e}$	5. Diverges by n -th-Term Test, $\lim_{n \rightarrow \infty} a_n = \frac{1}{6}$
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