

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. $\sum_{n=1}^{\infty} \frac{1 - 7n^2}{(n + 1)^2}$

II. $\sum_{n=1}^{\infty} \frac{n}{n + 1}$

III. $\sum_{n=1}^{\infty} \frac{2n}{\sqrt{4n^2 + 1}}$

- 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. $\sum_{n=1}^{\infty} \frac{3n^3 + 3n + 1}{1 - n^3}$

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

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

5. Verify that the infinite series $\sum_{n=1}^{\infty} \frac{2^n + 1}{2^{n+2}}$ diverges by using the n th-Term Test for Divergence. Show the value of the limit.

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