

10.7 Alternating Series Test

CA #2

Calculus

Name: _____

1. Explain why the Alternating Series Test does not apply to the series $\sum_{n=1}^{\infty} \frac{(-1)^n (n+1)!}{n!}$.

2. Determine the convergence or divergence of the series $\sum_{n=1}^{\infty} (-1)^n \frac{(2n-1)!}{(3n-2)!}$.

3. Which of the following series converge?

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

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

III. $\sum_{n=1}^{\infty} \frac{(-1)^n}{e^n}$

A. I only

B. I and II only

C. I and III only

D. I, II, and III

4. Which of the following statements are true about the series $\sum_{n=1}^{\infty} \sin \frac{(2n-1)\pi}{2}$?

I. The series is alternating.

II. $|a_{n+1}| \leq |a_n|$ for $n \geq 1$.

III. $\lim_{n \rightarrow \infty} a_n \neq 0$

A. I only

B. I and II only

C. I and III only

D. I, II, and III

5. Which of the following statements is true?

A. $\sum_{n=1}^{\infty} \frac{2(-1)^{n+1}}{\pi^n - \pi^{-n}}$ diverges by the Alternating Series Test.

B. $\sum_{n=1}^{\infty} (-1)^{n+1} \sin\left(\frac{(2n-1)\pi}{2}\right)$ converges by the Alternating Series Test.

C. $\sum_{n=1}^{\infty} (-1)^n n^{-1}$ diverges by the Alternating Series Test.

D. $\sum_{n=1}^{\infty} (-1)^n n^{-\frac{1}{3}}$ converges by the Alternating Series Test.

Answers to 10.7 CA #2

1. The Alternating Series Test does not apply because $\lim_{n \rightarrow \infty} a_n \neq 0$.	2. Converges by Alternating Series Test.	3. C	4. D	5. D
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