Merit 231 WS 16

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Metacognition

Identify the hardest topic for you in Calc II so far, and write 2-3 sentences on ways you can improve your studying of this topic.

Alternating Series Test

Problem 1

(a)

Write the general form of an alternating series, including any restrictions on b_n.

(b)

State the Alternating Series Test.

(c)

How can you show that a sequence is (eventually) decreasing?

(d)

Draw an example of an alternating series where the Alternating Series Test **applies**. Explain in words why you think the Alternating Series Test works to show convergence.

(e)

Draw an example of an alternating series where the Alternating Series Test **does not apply**, and explain why not. Does the series you drew converge or diverge?

Problem 2

Determine whether each series is alternating.

(a)

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

(b)

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

(c)

$\sum_{n=1}^{\infty}\frac{\cos(n)}{n}$

(d)

$\sum_{n=1}^{\infty} \frac{\cos(n\pi)}{n}$

(d)

$\sum_{n=1}^{\infty} \frac{\sin(n\pi)}{n}$

Problem 3

Determine whether the following series converge or diverge. (The Alternating Series Test may or may not apply).

(a)

$\sum_{n=1}^{\infty} \left(-\frac{2}{3}\right)^n$

(b)

$\sum_{n=3}^{\infty} (-1)^n \frac{n^3-n^2+1}{2n^3-5n}$

(c)

$\sum_{n=0}^{\infty} \frac{1}{(-1)^n(2^n+3^n)}$