

Math 1272: Calculus II

Midterm III Review

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Determine whether the series

$$\sum_{n=0}^{\infty} \frac{n^3 + 2n^2 + 3n - 2}{n^2 + 3n + 6}$$

converges or diverges.

Determine the values of p for which the series

$$\sum_{n=0}^{\infty} \frac{\ln n}{n^p}$$

converges.

Determine whether the series

$$\sum_{n=0}^{\infty} \frac{n^3 + 2n^2 + 3n - 2}{n^4 + 3n + 6}$$

converges or diverges.

Determine whether the series

$$\sum_{n=0}^{\infty} \frac{n^3 + 2n^2 + 3n - 2}{n^4 + 3n + 6}$$

converges or diverges.

Determine whether the series

$$\sum_{n=0}^{\infty} (-1)^n \frac{\cos(\pi n)}{n}$$

converges or diverges.

For what values of p does the series

$$\sum_{n=0}^{\infty} (-1)^n \frac{1}{n^p}.$$

converge.

Determine whether the series

$$\sum_{n=0}^{\infty} \frac{101^n n^{102}}{n!}$$

converges or diverges.

Find the radius of convergence and interval of convergence for the power series

$$\sum_{n=1}^{\infty} \frac{x^n}{1 \cdot 3 \cdot 5 \cdots (2n - 1)}.$$

Find the first 4 terms in the Maclaurin series for $f(x) = e^x \sin x$.

