

Test 6 Retake

Select appropriate problems (all the series is one option, the taylor question, and the interval question are 2 other options) based on what you missed on the first test.

Convergence Tests (3pts each)

Prove convergence or divergence using appropriate tests. Show all relevant work and give precise justifications

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

2.
$$\sum_{n=1}^{\infty} \frac{6}{2n+1}$$

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

4.
$$\sum_{n=1}^{\infty} n^2 \frac{3}{2^n}$$

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For the following alternating series, additionally test for absolute convergence (4pts).

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

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Interval of Convergence (4 pts)

Give the interval of convergence for the following problem. You do not need to test endpoints.

6.
$$\sum_{n=1}^{\infty} \frac{(-1)^n (2x-1)^n}{n^3}$$

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Taylor Series (4 pts)

Write the Maclaurin Series for $f(x) = 3 + 2x \cos(3x^2)$, stopping after the 4th term. Your answer must use transformations from a known series.