

Testing for Convergence

Pick the appropriate test for the following infinite series.

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

(a) Direct comparison

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

(b) Alternating series

$$3. \sum_{n=1}^{\infty} n^2 e^{-n^3}$$

(c) Limit comparison

$$4. \sum_{n=1}^{\infty} (-1)^n 2^{\frac{1}{n}}$$

(d) Ratio

$$5. \sum_{n=1}^{\infty} \frac{\sin(\frac{1}{n})}{\sqrt{n}}$$

(e) Root

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

(f) Integral

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

(g) Divergence

$$8. \sum_{n=1}^{\infty} \frac{n!}{e^{n^2}}$$

(h) Geometric