

Other Convergence Tests

1. Find a series which is convergent but not absolutely convergent.

2. Determine whether the series $\sum_{i=1}^{\infty} \frac{\sin(i)}{i^3}$ is convergent or divergent? How about the series $\sum_{i=1}^{\infty} (-1)^{i+1} \frac{\sin(i)}{i^3}$?

3. Can you find a convergent series such that the limit of ratios is equal to 1? How about a divergent series such that the limit of ratios is equal to 1?

4. Determine whether the series $\sum_{i=1}^{\infty} (-1)^i \frac{i^2}{7^i}$ is convergent or divergent?

5. Use the ratio test to show that the series $\sum_{n=0}^{\infty} \frac{1}{n!}$ is convergent.

6. Use the ratio test to show that the series $\sum_{n=0}^{\infty} \frac{n^n}{3^n n!}$ is convergent.

7. Determine whether the series $\sum_{i=1}^{\infty} \left(\frac{n+2}{3n+4}\right)^n$ is convergent or divergent?