

Math 129 - Section 017  
Exercises on Convergence of Series

Determine whether each of the following series converges. **Explain your answers.**

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

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

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

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

5.  $\sum_{n=1}^{\infty} \frac{\sin n}{n^2}$

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

7.  $\sum_{n=12}^{\infty} \frac{n+2}{n^2-1}$

8.  $\sum_{n=2}^{\infty} \frac{3}{(\ln n)^2}$

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

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

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