

Determine whether each of the following series converges or diverges. Carefully state what convergence test you are using.

**Problem 1.**

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

**Problem 2.**

$$\sum_{n=1}^{\infty} \frac{n}{\sqrt{n!}}$$

**Problem 3.**

$$\sum_{n=1}^{\infty} \tan(1/n)$$