Do all work on additional paper.

Determine whether each of the following series converges or diverges, and support your claim with work (done in the way I've been demonstrating in class) showing one of the convergence tests. Conclude each with a sentence that includes the series, written in summation form, that tells whether the series converges or diverges, and by what test. So for example, your sentence would look like

$$\sum_{n=1}^{\infty} stuff \quad \text{converges by the ratio test.}$$

Don't forget geometric series, p-series and the nth term test!

1. $\displaystyle\sum_{n=0}^{\infty} \frac{3^n + 2}{5^n - 1}$

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

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

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

5. $\displaystyle\sum_{n=1}^{\infty} \frac{n}{n^2 + 7}$

6. $\displaystyle\sum_{n=1}^{\infty} \frac{3^n}{n^n}$