Classify each of the following series as a geometric series, p-series, or neither. Then determine whether the series converges or diverges. Name any tests or theorems you use. (Remember, if we can't use any of our new tests, we can always consider the sequence of partial sums.)

1. $\displaystyle\sum_{n=1}^{\infty} \frac{10 \cdot 2^{n-1}}{3^{n-1}}$

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

3. $\displaystyle\sum_{i=1}^{\infty} \frac{1}{\sqrt{i^3}}$

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

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

6. $\displaystyle\sum_{i=0}^{\infty} \left(\frac{3}{2} \right)^n$

7. $\displaystyle\sum_{i=3}^{\infty} \frac{5}{i-2}$

8. $\displaystyle\sum_{n=1}^{\infty} \ln\left(\frac{n+2}{n} \right)$