172 Homework 11 Name: ______________________________

1. Definition: $\sum_{n=1}^{\infty} a_n$ converges if

2. Sum the geometric series $\sum_{n=1}^{\infty} \frac{2^n}{3^{n+1}}$

3. Use partial fractions to find $\sum_{n=1}^{\infty} \frac{1}{n(n+1)}$

4. Use the alternating series test to check $\sum_{n=1}^{\infty} \frac{(-1)}{\sqrt{n}}$ for conditional convergence, absolute convergence, or divergence.

5. Use the limit comparison test to check $\sum_{n=1}^{\infty} \frac{n}{n^2 + 2n}$ for convergence. State explicity what you are comparing it to, and compute the appropriate limit.

6. Do the same for $\sum_{n=1}^{\infty} \frac{n}{\sqrt{n^5 + 2n}}$

7. Use the ratio test to check $\sum_{n=1}^{\infty} \frac{3^n}{n!}$ for convergence.

8. Use the root (or ratio) test to check $\sum_{n=1}^{\infty} \frac{n3^n}{2^{2n+1}}$ for convergence.

9. $\sum_{n=1}^{\infty} \frac{1}{n^p}$ converges if and only if

10. $\sum_{n=1}^{\infty} ar^{n-1}$ converges if and only if

11. The alternating series $\sum_{n=1}^{\infty} (-1)^n a_n$ where $a_n > 0$ converges if

12. Give examples of 3 alternating series: one that converges absolutely, one that converges conditionally, and one that diverges.