Series and Convergence 10.9 & 10.10 HWK   Name _____

Determine whether the series converges absolutely or conditionally, or diverges.

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

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

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

4. $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n}{\sqrt{n+4}}$

5. $\displaystyle\sum_{n=1}^{\infty} \frac{\cos(n\pi)}{n^2}$

Approximate the sum of each series by using the first five terms. Then find the error. State the interval of convergence. You may use your calculator.

6. $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n}{(n+1)!}$

7. $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1}$

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

Determine the number of terms required to approximate the sum of the series with an error less than 0.001.

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

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

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