Section 10.3

1. Determine whether the following series converge or diverge. Clearly state what test you applied, and apply it completely and correctly.

a.) $\sum_{n=1}^{\infty} \dfrac{n^2}{n + 2n^2}$

b.) $\sum_{n=2}^{\infty} \frac{1}{n(\ln n)}$

c.) $\sum_{n=1}^{\infty} ne^{-n^2}$

d.) $\sum_{n=2}^{\infty} \frac{1}{n^2+4}$

e.) $\sum_{n=5}^{\infty} \frac{1}{n - \sqrt{n}}$

f.) $\sum_{n=2}^{\infty} \frac{1}{n^5 - 5n}$

g.) $\sum_{n=1}^{\infty} \frac{2^n}{n + e^n}$

h.) $\sum_{n=1}^{\infty} \frac{\ln n}{\sqrt{n^5}}$

2. Use the 10th partial sum to estimate the sum of the series $\sum_{n=1}^{\infty} \frac{1}{n^4}$. How accurate is this estimate?

3. How large do we need to choose n so that s_n approximates $\sum_{n=2}^{\infty} \dfrac{1}{n(\ln n)^4}$ to within 10^{-3}?

Section 10.4

4. Determine whether the following series converge or diverge. If it converges, does it converge absolutely?

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

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

c.) $\sum_{n=1}^{\infty} \dfrac{(-1)^n n}{n+1}$

d.) $\sum_{n=1}^{\infty} \frac{n^2}{(n+1)(-4)^n}$

e.) $\sum_{n=1}^{\infty} \frac{3^n n^2}{(2n)!}$

5. Show $\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!}$ converges absolutely and then approximate the sum of the series with the third partial sum. How close is this approximation to the sum of the series?

6. Approximate $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^2}$ with error less than .01.