Math 253 GWS 4 - 8.3 Integral and Comparison Tests Name:______________________________

1. Use the integral test to determine whether the series is convergent or divergent.

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

b. $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n+4}}$

2. Use the comparison test to determine whether the series is convergent or divergent.

a. $\sum_{n=1}^{\infty} \frac{n}{2n^3+1}$

b. $\sum_{n=2}^{\infty} \frac{n^3}{n^4-1}$

3. Use the limit comparison test to determine whether the series is convergent or divergent.

$\sum_{n=1}^{\infty} \frac{5}{3^n-2}$

4. Determine whether the series is convergent or divergent using whatever method is easiest. Note that the method may come from this chapter or previous chapters!

a. $\sum_{n=1}^{\infty} (n^{-1.4} + 3n^{-1.2})$

d. $\sum_{n=1}^{\infty} \frac{1}{n^2 + 9}$

b. $1 + \frac{1}{8} + \frac{1}{27} + \frac{1}{64} + \frac{1}{125} + ...$

e. $\sum_{n=1}^{\infty} \frac{4 + 3^n}{2^n}$

c. $\sum_{n=1}^{\infty} \frac{n^2}{n^3 + 1}$

f. $\sum_{n=1}^{\infty} \frac{1 + \sin(n)}{10^n}$

5. Use the sum of the first 10 terms to approximate the sum of $\sum_{n=1}^{\infty} \frac{3}{(n+1)^2}$ and estimate the error of this approximation. Then determine how many terms you need to ensure an error of less than 0.00001.