

Math 181  
Spring 2010

Name \_\_\_\_\_

Homework #13  
Due Thursday, May 6  
No late papers accepted! No excuses!

1. Which of the series converge or diverge. Identify the test used.

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

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

c)  $\sum_{n=1}^{\infty} \frac{n!}{n^n}$

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

2. Which of the sequences below converge and which diverge? Find the limit of each convergent sequence.

a)  $a_n = \frac{\ln n^2}{n}$

b)  $a_n = \frac{1-2^n}{2^n}$

c)  $a_n = \left(\frac{n+1}{n-1}\right)^n$

3/ **Set up but do not evaluate the integral** to find the length of the cardioid  
 $r = 1 + \sin \theta$ .

4. Express the function as the sum of a power series by first using partial fractions. Find the interval of convergence.

$$f(x) = \frac{7x - 1}{3x^2 + 2x - 1}$$