Math 142 - Suggested Study Guide for Midterm 3

Here are examples of problems similar to ones that might be on the exam.

- **Improper Integrals** Cht. 8 review # 81, 83, 85
  Make sure you know the p-test for both integrals and series.

- **Basic Series Question** Cht. 9 review # 1

- **Convergence and Divergence** Cht. 9 review # 23, 24, 25, 26, 37, 38, 45, 47, 49, 51
  For each of these problems try to find the best test to use. If you solve the problem one way, try to see if there is another test that is even easier to use.

- **Sums of Series** Cht. 9 review # 27, 29
  What is the formula for the sum of a geometric series?

- **Intervals of Convergence** Cht. 9 review # 65, 67

- **Taylor Polynomials** Cht. 9 review # 57

You must be able to recognize the special types of series including: geometric series, alternating series, p-series, and power series.

Make sure that you know each of the following tests:
- Divergence Test
- Integral Test
- Comparison Test
- Ratio Test
- Alternating Series Test
- p-Test

Memorize the formula for a Taylor polynomial

$$P_n(x) = f(a) + f'(a)(x - a) + \frac{f''(a)}{2!}(x - a)^2 + \frac{f^{(3)}(a)}{3!}(x - a)^3 + ... + \frac{f^{(n)}(a)}{n!}(x - a)^n.$$