Exam 3 - Spring 2013

Review Sheet

November 12, 2013

1. **Definitions to know:** sequence, limit of a sequence, monotonic, bounded sequence, series, geometric series, harmonic series, absolutely convergent, conditionally convergent, power series, radius (and interval) of convergence
2. **Theorems to know:** monotonic sequence theorem, alternating series estimation theorem, and that the sum of a geometric series of $\Sigma_{n=0}^{\infty} ar^n$ is $\frac{a}{1-r}$ when $|r| < 1$
3. Be able to apply each of the following tests to determine if a series converges:
   - n^{th} term test for divergence
   - Integral test
   - Comparison test
   - Limit Comparison test
   - Alternating Series test
   - Ratio test
   - Root test
   - Absolute convergence test
4. Be able to apply the alternating series estimation theorem.
5. Be able to find the radius of convergence and the interval of convergence of a power series.
6. Find a power series representation for a function, as done in Section 11.9
7. Find a Taylor series of a function at a (including any of those on page 779)
8. Use a power series representation (or an n^{th} order Taylor polynomial) to approximate a definite integral or estimate the value of the the function which it represents.
9. Be able to apply Taylor's Inequality