

Review Sheet for Test 4 (covering 8.3,8.4,8.5,8.6 and some 8.7)

1. 8.3 and 8.4 Testing for Convergence

- (a) Know the statement of ALL tests. Be able to check conditions for each test and apply correctly.
- (b) Practice, practice, practice. Good, clear writing.
- (c) For a series, tell me which test you used and the result.

2. 8.5 Radius of Convergence and Interval of Convergence

- (a) Be able to use the ratio test to determine for which x the series converge.
- (b) Recall there are three cases: $R=0$ (occurs when the limit portion is ∞), $R=\infty$ (occurs when the limit portion is 0), R =finite, non-zero number.
- (c) Find the interval of convergence in each case: $x=a$, $-\infty < x < \infty$, $a - R < x < a + R$ (resp.) In this last case, you must check the end points for convergence.

3. 8.6 Power Series Representations

- (a) Be able to write a function in terms of $\frac{1}{1-x}$
- (b) Be able to write a function's power series representation based on the above transformation using $\sum_{n=0}^{\infty} x^n$.
- (c) Be able to find the radius of convergence based on the fact that we know $|x| < 1$.

4. 8.7 Taylor Series

- (a) Given a function and the existence of a Taylor series, be able to write out the series centered at a given a .
- (b) Be able to determine what a series converges to when it resembles a known Taylor series.
- (c) Know the Taylor Series for e^x , $\sin(x)$, $\cos(x)$, $\frac{1}{1-x}$
- (d) Be able to answer questions about $f^{(n)}(a)$ given the power series for $f(x)$ centered at a .