

Quiz 8

Math 253

Name:

TRUE/FALSE: Write "True" in each of the following cases if the statement is *always* true and give justification. Otherwise, write "False" and provide a counterexample.

1. [3] Given that $\sum_{n=0}^{\infty} c_n(-4)^n$ is convergent, $\sum_{n=0}^{\infty} c_n4^n$ also converges.

2. [2] Given that $\sum_{n=0}^{\infty} c_n(-4)^n$ is convergent, $\sum_{n=0}^{\infty} c_n$ also converges.

Show your work for the following problems. The correct answer with no supporting work will receive NO credit.

3. [3] Find the interval of convergence for $\sum_{n=2}^{\infty} (-1)^n \frac{(2x+3)^n}{n \ln n}$

4. [2] Find a power series representation for

$$f(x) = \frac{1}{1-x^3}.$$