

Math 101B Test Ch 8

Name _____

Show your work to receive full credit. (10 points each problem)

1. a) Explain the difference between a sequence and a series. Give examples.

b) Determine if this statement is TRUE or FALSE and justify your answer.

“If $\lim_{n \rightarrow \infty} a_n = 0$, then $\sum_{n=1}^{\infty} a_n$ converges.”

2. Write out the first four terms and find the sum of the following convergent series.

a) $\sum_{n=1}^{\infty} \frac{2^{n+2}}{3^n}$

b) $\sum_{n=0}^{\infty} \left(\frac{1}{2n+1} - \frac{1}{2n+3} \right)$

3. Determine if the following converge or diverge. Clearly show how your conclusion was reached and state the test used.

a) $\sum_{n=1}^{\infty} \frac{\ln n}{n^4}$

b) $\sum_{n=1}^{\infty} \frac{n^3}{2^n}$

4. Use MacLaurin Polynomial techniques to find the fourth degree polynomial for $f(x) = 2^x$.

5. Find power series for the following functions:

a) $f(x) = \frac{3}{2+x}$ centered at $c = 0$. Find its interval of convergence.b) The derivative of $f(x) = \frac{3}{2+x}$ centered at $c = 0$.c) The integral of $f(x) = \frac{3}{2+x}$ centered at $c = 0$.