

TEST 4

Math 152 - Calculus II

Score: _____ out of 100

4/26/2013

Name: _____

Read all of the following information before starting the exam:

- You have 50 minutes to complete the exam.
- Show all work, clearly and in order, if you want to get full credit. Please make sure you read the directions for each problem. I reserve the right to take off points if I cannot see how you arrived at your answer (even if your final answer is correct).
- Please or otherwise indicate your final answers.
- Please keep your written answers brief; be clear and to the point. I will take points off for rambling and for incorrect or irrelevant statements.
- This test has 5 problems and is worth 100 points. It is your responsibility to make sure that you have all of the pages!
- Good luck!

1. Determine if the following series converge or diverge. Clearly state the test you are using to obtain your answer.

(a)
$$\sum_{n=0}^{\infty} \frac{5^n}{(2n)!}.$$

(b)
$$\sum_{n=1}^{\infty} \left(\frac{\tan^{-1}(2n)}{7 \tan^{-1}(n)} \right)^n.$$

(c)
$$\sum_{n=3}^{\infty} (-1)^{n+1} \frac{\ln(n+2)}{n}.$$

2. Determine if the following series is absolutely convergent, conditionally convergent, or divergent.

$$\sum_{n=2}^{\infty} \frac{(-1)^n}{\ln(n)}.$$

3. Using the formula, **set up a table** and find the first THREE nonzero terms of the Maclaurin series for

$$f(x) = \ln(1 + x).$$

Be sure to write out the series!

4. Using the formula, **set up a table** and find the first THREE nonzero terms of the Taylor series about $x_0 = 4$ for

$$f(x) = \sqrt{x}.$$

Be sure to write out the series!

5. Find the **radius of convergence** and **interval of convergence** for the power series

$$\sum_{n=1}^{\infty} \frac{(x-2)^n}{n}.$$