

MATH 227: Calculus I
Practice Problems

Spring 2009

NAME :

Problem	Possible points	Score
1	20	
2	20	
3	20	
4	20	
5	20	
Total	100	

Problem 1. (20pts) Determine whether the following series converges or diverges. If the series converges, determine whether it converges absolutely or conditionally. To receive full credit, be sure to explain your reasoning.

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

Problem 2. (20pts) Find the interval of convergence for the following power series.

$$\sum_{n=1}^{\infty} \frac{(-1)^{n+1}(x+2)^n}{n2^n}$$

Problem 3. (20pts) Find the Maclaurin series for the following function and determine the radius of convergence of the series.

$$\frac{x^2}{1-x}$$

Problem 4. (20pts) Find the Taylor polynomial of degree 4 (at the origin) for the function

$$\sin^2 x$$

Problem 5. (20pts) Find the first four terms of the binomial series for the function

$$\left(1 + \frac{x}{2}\right)^{1/3}$$