

MATH 2260

Midterm Exam III – Alternate

April 23, 2013

NAME (please print legibly): _____

Your University ID Number: _____

Please complete all questions in the space provided. Draw a box around your final answer. You may use the backs of the pages for extra space, or ask me for more paper if needed. Work carefully, and neatly (part of your grade will be based on how well your work is presented).

Try to complete the problems you find easier before going back to the harder ones. Good luck!

QUESTION	VALUE	SCORE
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
TOTAL	60	

1. (10 points) Find the limit of the **sequence**

$$\lim_{n \rightarrow \infty} \frac{\ln n^2}{n}$$

2. (10 points) Does the **series**

$$\sum_{n=0}^{\infty} \frac{\ln n}{\ln(\ln n)}$$

converge or diverge? Use any test you like.

3. (10 points) Does the series

$$\sum_{n=1}^{\infty} \frac{(-3)^n}{n!}$$

converge or diverge? Use any test you like.

4. (10 points) Consider the power series

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

What is the center of the power series? What is the radius of convergence? (To save time, you can skip checking convergence at the endpoints of the interval.)

5. (10 points) For which values of x does the series

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

converge or diverge? Use any test you like.

6. (10 points) Find the value of the convergent series

$$\sum (-1)^n \frac{3}{4^n}.$$