

MthU242  
Northeastern University  
Quiz #8  
20 Minutes

Calculus II  
Professor Gilmore  
Mar. 15, 2007

Name: \_\_\_\_\_.

Show All Your Work

1. The New England Aquarium has a tank which measures 30 meters deep, 20 meters wide and 40 meters long. It is filled with fresh water which has a mass of 1,000 kilograms per cubic meter. Find the work needed to pump all of the water out of this tank when it is full.

2. Consider the infinite series  $\sum_{n=0}^{\infty} \frac{3^n \cdot n!}{(n+3)!}$ . Does this sequence diverge, or converge? Use the ratio test and explain how you use it to back up your statement.

3. Consider the infinite series  $\sum_{n=0}^{\infty} \frac{n^2 \cdot 3^n}{n!}$ . Does this sequence diverge, or converge? Use the ratio test and explain how you use it to back up your statement.

Name: \_\_\_\_\_.