Student Number:

MATH 121 - TEST 2 (Based on Assignments 4, 5, 6 and 7) Version 2B Fall 2010

This test consists of 3 questions to be answered in the space provided. Show all work and give explanations when needed.

1. Find the intervals on which $f(x) = x^5 - kx$ is increasing, and those on which it is decreasing, if

(a) k = 4

(b) k = -2

Test 2-2B

2. Sand falls from a hopper at a rate of 0.2 m³ per minute. The pile of sand created forms a cone, with the sides at an angle $\frac{\pi}{4}$ from the vertical.



Find the rate at which the *height* of the cone is changing when the radius is r = 5 m.

Last name:(blockletters)_____ First/Given Name:_____

Test 2- $2\mathrm{B}$

3. Evaluate the limits below.

(a)
$$\lim_{x \to \infty} \frac{x}{\ln(x)}$$

(b)
$$\lim_{x \to 0^+} \frac{x}{\ln(x)}$$

You must show how you arrived at your answer. You may use any approximation or limit rule covered in class.