Math 118 – Week 5 Assignments

Fall Term 2003

BUCKMIRE

Monday September 22 *Class 10*:

The microscope equation and relative error.

Homework #7 (*5 points)*:

1 (a) Is the function $x^{4/5}$ locally linear at $x = 1$ Explain your answer.

(b) Is the function $x^{4/5}$ locally linear at $x = 0$ Explain your answer.

2 Suppose the side of a square measures x meters, with a possible error of Δx meters.

(a) Write the equation which describes how the error in length propagates to an error in the area.

(b) Write the equation which describes how the *relative error* in length propagates to a relative error in the area.

3 Write the microscope equation for $w = \sqrt{(}1 + x)$ at $x = 0$. use the Miscroscope approximation to estimat the values of $\sqrt{.9788}$ and $\sqrt{1.1056}$. Compare your estimates with the values provided by a calculator and comment.

Due: Class 11

Wednesday September 24 *Class 11*:

We will review the connections between derivatives and graphs, and look closely at some of the theories that cover these connections in an interactive class.

Reading:

Smith & Minton, p. 286–296

Homework #6 (*4 points)*:

1. (a) For what positive values of x does $f(x) = x + 7/x$ attain its minimum value? Explain how you found this value.

(b) For what positive values of x in the interval [1,2] does $f(x) = x + 7/x$ attain its minimum value? Explain how you found this value.

2. By how much can x^p exceed x^q when $0 < p < q$ and $0 < x$? For which x does this happen?

Due: Class 12

Thursday September 18 Lab #3: The Predator-Prey Model

Topic: We will study several population models for two species in competition using Euler's Method and EXCEL.

Friday September 19 *Class 12*:

We will discuss more general functions (those of several variables) and how to take their derivatives (partial derivatives).

Homework:

Quiz # 4: Multivariable functions

Due: Class 13