ACE Calc I
Chapter 3B – Applications of the Derivative v4

Assignment Sheet

**This is a tentative schedule only. Actual assignments may differ from what is shown.*

Day	Section	Page	Assignment
1	3.7 Optimization	220	Odds #2c,9,17,19
2	3.7 Optimization Practice		Worksheet
3	3.8 Newton's Method	229	Odds #3,7,11,15,21,23,34
4	3.9 Differentials	236	Odds #7,11,15,19,23,25,27,29,37
5	Review		
6	Test		

Chapter 3B – Board Problems

Day	A	B
1	A rectangular plot of farmland will be bounded on one side by a river and on the other three sides by a single-strand electric fence. What is the minimum amount of fencing needed to enclose an area of ½ Acre. (**Note:** 1 Acre = 43560 sq. feet)	You are planning to make an open rectangular box from an 8in. x 15in. piece of cardboard by cutting squares from the corners and folding up the sides. What are the dimensions of the box of largest volume you can make this way?

Day	C	
1	Two sidewalks intersect at a right angle. Starting from the intersection, one person walks along one sidewalk at 7ft/sec. A second person starting from 100 ft away from the intersection walks towards the intersection at 4.5 ft/sec. At what time is the distance between the two walkers minimized?	

2	NONE

Day	A	B
3	Use 2 iterations of Newton's Method to approximate a zero of $f(x) = \sin x$ with an initial guess of $x_1 = 3$.	Use Newton's Method to approximate the zeros until successive values are within 0.001 of each other. $$f(x) = 3\sqrt{x-1} - x$$

Day	C	D
3	Use 2 Newton's Method to approximate the intersection of $f(x) = \cos x$ and $g(x) = x^2$ on $[0, \pi]$.	Use Newton's Method to approximate the fixed points of $f(x) = \tan(x)$ on $\left[\dfrac{\pi}{2}, \dfrac{3\pi}{2}\right]$.

Day	A	B	C
4	Find and compare Δy and dy: $y = 2x^3 - 5x$ when $x = 3$ and $\Delta x = .2$	Find dy: $$y = \cos^2(3x^2 - 7x)$$	Use a tangent line to approximate the value of $\sqrt[3]{9}$.

Day	D
4	A solid steel (cylindrical) rod has a diameter of ½ inch. The rod is cut to a length of 1 foot, 3¾ inches with a measurement error of $\pm 1/4$ inch. Find the propagated error and the percent error for the volume of the steel rod.