↑↑ Last Name ↑↑ , ↑↑ First Name ↑↑

Math 163A Homework Set #1

Due Friday, April 4, 2008

Problem:	1	2	3	4	5	Total
Score:						
Possible:	5	5	5	5	5	25

[1] (based on suggested problems 1.1#31, 47, 51)

(a) Find an equation for the line through $(4,1)$ that is perpendicular to $x-2y=-6$. Present your equation in slope-intercept form. Show your work and explain.

(b) Graph the two lines on the same set of axes. Make your graph large and neat, and be sure to put coordinates on all these key points:

- all axis intercepts
- the given point
- the point where the two lines intersect

[2] (based on suggested problem 1.2#27) Scoops Ice Cream Shop charges $2.00 for an ice cream cone. Their cost for running the shop for a day and producing *x* ice cream cones is $C(x)=0.75x+375$.

(a) What is the marginal cost? Explain.
(b) What is the fixed cost? Explain.
(c) Find the Revenue function. Show your work and explain.
(d)Find the break-even quantity. Show your work and explain.
(e) Find the Profit function. Show your work, explain, and simplify your answer.
(f) What is the profit from selling 400 ice cream cones in one day? Show your work.
(g) How many cones must Scoops sell in one day to make $500 profit that day? Show your work.

[3] (based on suggested problem 2.1#43) Let $f(x)=\dfrac{5x-2}{3x+7}$.

(a) Find $f(4)$. Present your answer as a fraction, simplified and in lowest terms.

(b) Find $f\left(-\dfrac{1}{3}\right)$. Present your answer as a fraction, simplified and in lowest terms.

(c) Find $f(a)$. Present your answer as a fraction, but don't simplify it.

(d) Find $f\left(\dfrac{2}{m}\right)$. Present your answer as a fraction, but don't simplify it.

(e) Find any values of *x* such that $f(x)=1$. Show your work. Present your answer as a fraction, simplified and in lowest terms.

[4] (based on suggested problem 2.1#63) Let $f(x)=-3x^2+5x+7$.

(a) Find $f(x+h)$. Show your work and simplify your answer.

(b) Find $f(x+h)-f(x)$. Show your work and simplify your answer.

(c) Find $\dfrac{f(x+h)-f(x)}{h}$. Show your work and simplify your answer.

[5] (based on concepts discussed in class and in the reading)

Suppose that a formula $y=f(x)$ for a function is given. Explain how you can determine the *x*-intercepts and *y*-intercept on the graph of f without actually making the graph.