

Last Name																				

First Name																				

Section		

Math 163A Homework Set #1
 Due Friday, January 11, 2008

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

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

- (a) Find an equation for the line through $(-4,1)$ that is perpendicular to $2x + y = 6$. 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) Jitters Coffee Shop charges \$1.50 for a cup of coffee. Their cost for running the shop for a day and producing x cups of coffee is $C(x) = 0.25x + 350$.

- (a) What is the fixed cost? Explain.
- (b) What is the marginal cost? Explain.
- (c) What is the revenue function? Explain.
- (d) What is the break-even quantity? Show your work and explain.
- (e) What is the profit function? Explain.
- (f) What is the profit from selling 300 cups of coffee in one day? Show your work.
- (g) How many cups of coffee must Jitters sell in one day to make \$500 profit that day? Show your work.

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

- (a) Find $f(4)$.
- (b) Find $f\left(-\frac{1}{2}\right)$.
- (c) Find $f(a)$.
- (d) Find $f\left(\frac{2}{m}\right)$.
- (e) Find any values of x such that $f(x) = 1$. Show your work.

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

- (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 $\frac{f(x+h) - f(x)}{h}$. 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.