

NAME: _____

MATH 11009

HOMEWORK #2 (8 pts)

SPRING 2013

SHOW ALL WORK FOR FULL CREDIT — PLEASE CIRCLE YOUR FINAL ANSWER

DUE: THURSDAY, JANUARY 31, 2013 AT THE BEGINNING OF CLASS

1. In seawater, the pressure p is a function of the depth d according to the model

$$33p - 18d = 496,$$

where d is the depth in feet and p is in pounds per square inch.

- (a) (1 pt) What is the slope of this function?

- (b) (0.5 pt) Interpret this slope in the context of the problem.

2. (1 pt) Find the equation of the line parallel to $5y + 2x = 1$ passing through $(-8, 3)$.

3. (1 pt) Find the equation of the line perpendicular to $7x + 9y = 2$ passing through $(\frac{1}{2}, -4)$.

4. (1 pt) Find the equation of the line passing through $(-7, 2)$ and $(-4, 9)$.

5. A company builds and retails bicycles and the total cost is linear. The total cost of manufacturing 200 bicycles is \$3,200 and the total cost of manufacturing 450 bicycles is \$5,350.

(a) (1 pt) Find the rate of change of the function.

(b) (0.5 pt) Interpret your answer to (a) in the context of this problem.

(c) (1 pt) Write a linear model for this problem, using y for the total cost and x for the number of bicycles.

6. (1 pt) Given $f(x) = 4x^2 - 5x + 3$, find

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