

## HOMEWORK 2 - MATH 140

DUE DATE: Monday, January 24

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. One part of each homework problem will be chosen at random and graded. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Graph the function  $f(x) = 3x - 7$  using
  - (a) the  $x$ - and the  $y$ -intercepts.
  - (b) the slope and the  $y$ -intercept.
2. Suppose that the quantity supplied  $S$  and the quantity demanded  $D$  of hot dogs at a baseball game are given by the following functions  $S(p) = -1800 + 2500p$  and  $D(p) = 10,200 - 1500p$ , where  $p$  is the price. The **equilibrium price** of a market is defined as the price at which the quantity supplied equals the quantity demanded. Find the equilibrium price and the equilibrium supply for the hot dogs.
3. Determine the equation of the line with slope  $\frac{2}{5}$  going through the point  $(-1, 1)$ .
4. Determine the equation of the line going through the points  $(-3, 8)$  and  $(2, -7)$ .
5. Determine the equation of the line that is perpendicular to the line containing the points  $(-3, -4)$  and  $(2, 1)$  and goes through the point  $(-1, 1)$ .
6. The perimeter of a rectangle is 80 meters. Find its length and width if the length is 20 meters longer than the width.
7. Michigan apples costing \$3.00 per pound are to be mixed with premium California oranges costing \$4.50 per pound to produce a 5 lb mixed fruit bag. How much should the weight of the apples be if the bag is to be sold for \$20.00?
8. The cooling system of a car has a capacity of 15 liters. If the system is filled with a mixture that is 40% antifreeze, how much of this mixture should be drained and replaced by pure antifreeze so that the system is filled with a solution that is 60% antifreeze?