Week-in-Review 2 (2.1, 2.2)

Problem 1. Find the equation of the line that

(1) has a slope of $\frac{3}{4}$ and has a y intercept of 10.
   (a) How would you write the above equation in standard form?
(2) has $m = -5$ and passes through the point $(6, 10)$
(3) passes through the points $(5, 5)$ and $(8, 2)$
(4) passes through the point $(5, 5)$ and the origin.
(5) passes through the point $(3, 7)$ and has a slope of zero
(6) passes through the point $(3, 7)$ and has an undefined slope.

Problem 2. Given the line $6x + 4y = 20$,

(1) Does the line have a positive or negative slope?
(2) Find the x-intercept of this line.
(3) Find the y-intercept of this line.
(4) Write the equation of the line in the slope-intercept form.
(5) If x increases by 3 units what is the corresponding change in y?
(6) If y increases by 3 units what is the corresponding change in x?
(7) Graph the line using technology.

Problem 3. A new building costs $\$1,300,000$ and has a useful life of 40 years and a scrap value of $\$600,000$. Using a linear depreciation model, find the following.

(1) The equation for the value $V(t)$ of the building after t years.
(2) The value of the building after 1 year.
(3) The value of the building after 2 years.
(4) The value of the building after 35 years.
(5) The value of the building after 50 years.

Problem 4. It costs a company $\$391,620$ to make 1050 electronic readers and $\$729,820$ to make 2000 electronic readers. The company has a loss of \$1670 when 50 electronic readers are produced and sold.

(1) Find the linear cost function for the company.
(2) Write out the linear Profit eqaution from the information provided.
(3) Can you find the linear revenue function for the company?
(4) What is the revenue of the company if 250 readers are sold?
(5) How many readers must the company produce and sell in order to have zero profit?

Problem 5. Producers will make 2000 refrigerators available when the unit price is \$270. At a unit price of \$310, producers will be willing to market 6000 refrigerators. Given that p represents the unit price of a refrigerator and x represents the quantity supplied,

(1) Find the linear supply equation
(2) How many refrigerators will be marketed when the unit price is \$350?
(3) At what price will suppliers be unwilling to market refrigerators?

Problem 6. A sports store in town found that when the price of a tennis racquet is \$81, the number of racquets bought per month is 4900 while the number of racquets supplied by the manufacturer is 5250. When the price of racquets drops **by** \$9, the demand increases **by** 900 racquets and the manufacturer will only supply 5100 racquets at this price.

(1) Find the linear demand equation.
(2) At what price will no consumers be willing to buy racquets?
(3) According to the above model, how many racquets would consumers buy if they were available at a price of \$0?
(4) Find the linear supply equation
(5) At what price will suppliers be unwilling to supply racquets?