Math 1101: Example Problems for Sec. 2.3

1. A watch manufacturer has total revenue for their watches given by \( R = 89.75x \) and incurs a total cost of \( C = 23.5x + 1192.5 \), where \( x \) is the number of watches produced and sold. Use graphical methods to find the number of units that gives break-even for the product.

2. A certain model of treadmill has supply and demand functions given by \( p = 40q + 240 \) and \( p = 500 - 25q \), respectively. If the price \( p \) is $60, how many units \( q \) are supplied and how many are demanded? What price gives market equilibrium, and how many units are demanded and supplied at this price?

3. The two most common names for streets in the United States are Second street and Main street, with 15684 streets bearing one of these names. There are 260 more streets named Second Street than Main Street. How many streets bear each name?

4. The owner of The Daily Grind coffee shop mixes French roast coffee worth $9.00 per pound with Kenyan coffee worth $7.50 per pound in order to get 10 lb. of a mixture worth $8.40 per pound. How much of each type of coffee was used?

5. Emily inherited $15000 and invested it in two municipal bonds, which pay 4% and 5% simple interest. The annual interest is $690. Find the amount invested at each rate.

6. Christopher’s boat travels 45 mi downstream in 3 hr. The return trip upstream takes 5 hr. Find the speed of the boat in still water and the speed of the current.