Managerial Economics Chapter Two Study Problems

1. What happens to the demand for Sony color television sets when each of the following changes occurs?

   _____ a. The price of Zenith color television sets rises.

   _____ b. The price of a Sony rises.

   _____ c. Personal income falls (color televisions are normal goods).

   _____ d. Technological advances result in dramatic price reductions for video tape recorders.

   _____ e. Congress is persuaded to impose tariffs on Japanese television sets starting next year.

2. What happens to the supply of random access memory (RAM) chips, a component in the manufacture of personal computers, when each of the following changes occurs?

   _____ a. Two huge new manufacturing plants begin operation in South Korea.

   _____ b. Scientists discover a new production technology that will lower the cost of making RAM chips.

   _____ c. The price of silicon, a key ingredient in RAM chip production, rises sharply.

   _____ d. The price of RAM chips increases.

   _____ e. The market for personal computers turns sour and RAM chip makers now expect RAM chip prices to fall by 25 percent next quarter.

4. Suppose the quantity demanded of good (Q_d) depends only on the price of the good (P), monthly income (M), and the price of a related good R (P_R):

$$Q_d = 180 - 10P - 0.2M + 10P_R$$

   a. On the axes below, construct the (direct) demand curve for the good when M = \$1,000 and P_R = \$5. The equation for demand is

$$Q_d = \_\_\_\_\_.$$

   b. Interpret the intercept and slope parameters for the demand equation in part *a*.

   c. Let income decrease to \$950. Construct the new demand curve. This good is _____ (normal, inferior). Explain using your graph.

   d. For the demand curve in part *c*, find the inverse demand function:

$$P = \_\_\_\_\_.$$

   e. Let the price of good R increase to \$6 (income remaining at \$950). Construct the new demand curve. Good R is a _____ (substitute, complement) good. Explain using your graph.

5. Consider the following demand and supply functions for tomatoes:

$$Q_d = 6,000 - 4,000P$$
$$Q_s = -1,000 + 10,000P$$

a. Plot the demand and supply functions on the axes below.

b. At a price of \$1.00 per tomato, _____ tomatoes is the maximum amount that can be sold. A price of \$_____ per tomato is the maximum price that consumers will pay for 2,000 tomatoes, which is the demand price for 2,000 tomatoes.

c. The maximum amount of tomatoes that producers will offer for sale if the price of tomatoes is \$0.30 is _____. The minimum price necessary to induce producers to offer voluntarily 2,000 tomatoes for sale is \$_____, which is called the supply price for 2,000 tomatoes.

d. In equilibrium, the price of tomatoes is \$_____ and _____ tomatoes will be sold.

e. In equilibrium, the quantity of tomatoes produced is _____ tomatoes.

f. In equilibrium, the quantity of tomatoes consumed is _____ tomatoes.

g. Are your answers to parts *e* and *f* the same? Why or why not?

h. Congress imposes a \$0.30 per tomato ceiling price on tomatoes. This results in a _____ (surplus, shortage) of _____ tomatoes.

ANSWERS:

1. a. Demand increases (shifts rightward)
   b. Nothing happens to Sony demand; demand does not shift. Quantity demanded, however, decreases.
   c. Demand decreases (shifts leftward)
   d. Demand increases (shifts rightward)
   e. Demand in the current time period increases (shifts rightward) since consumers expect price to be higher next year.

2. a. Supply increases (shifts rightward)
   b. Supply increases (shifts rightward)
   c. Supply decreases (shifts leftward)
   d. Nothing happens to RAM chip supply; supply does not shift. Quantity supplied, however, increases.
   e. Supply in the current time period increases (shifts rightward) as producers increase production in the current time period to sell more chips at a price that is higher relative to the price they expect to receive in the next quarter.

4.

a. $Q_d = 30 - 10P$. The demand curve is shown in the figure above.

b. Intercept parameter $a = 30$: If price is zero, consumers will take only 30 units.
   Slope parameter $b = -10$: For each \$1 increase in price, consumers buy 10 fewer units.

c. The demand curve is shown in the figure above as $Q_d = 40 - 10P$. Inferior, since *decreasing* income from \$1,000 to \$950 results in an increase in demand, which can only happen for inferior goods.

d. $P = 4 - 1/10\,Q_d$

e. The demand curve is shown in the figure above as $Q_d = 50 - 10P$. Substitutes, since increasing the price of R from \$5 to \$6 results in an increase in demand.

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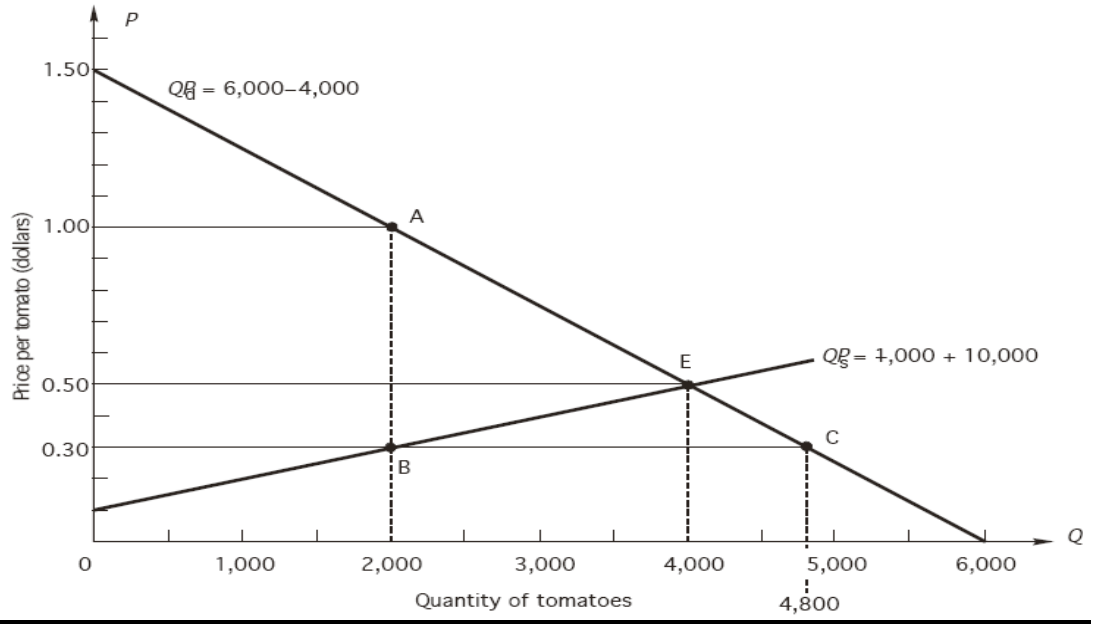
5. a. Your demand and supply curves should look like this:



b. 2,000 $(= 6,000 - 4,000 \times 1.00)$ see point A; \$1

c. 2,000 $(= -1,000 + 10,000 \times 0.30)$ see point B; \$0.30

d. \$0.50; 4,000 (see point E)

e. 4,000

f. 4,000

g. Yes, in equilibrium quantity consumed equals quantity produced ($Q_d = Q_s$).

h. Shortage; 2,800. Notice that at \$0.30, quantity demanded is 4,800 $(= 6,000 - 4,000 \times 0.30)$, and quantity supplied is 2,000 $(= -1,000 + 10,000 \times 0.30)$. Thus, the shortage is 2,800 $(= 4,800 - 2,000)$.