

Homework Questions...?

p.132 #14, 16, 20, 22, 24, 29, 31

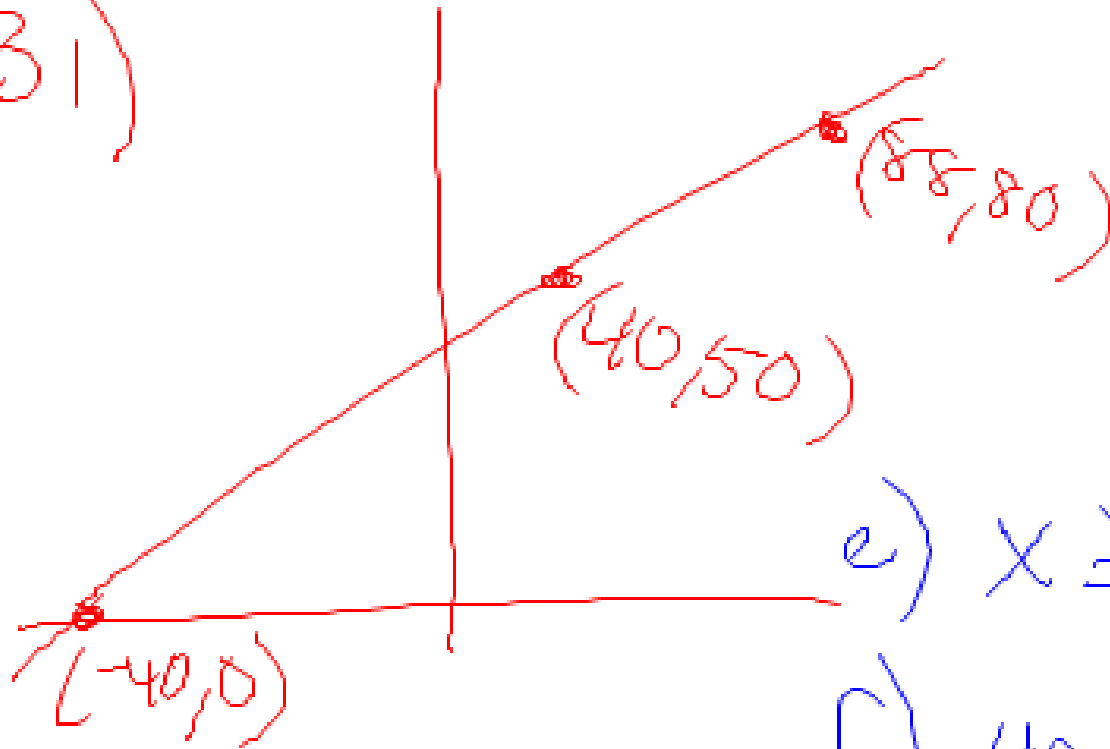
$$y = mx + b$$

22) $(-2, \frac{1}{4})$
 $(-1, \frac{1}{2})$
 $(0, 1)$
 $(1, 2)$
 $(2, 4)$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{\frac{1}{2} - \frac{1}{4}}{-1 - (-2)}$$
$$\frac{2 - 1}{1 - 0} = \frac{1}{1} = \frac{\frac{1}{4}}{1} = \frac{1}{4}$$

Not linear.

31)



a) $x = 40$

b) $x = 88$

e) $x \geq 88$

c) $x = -40$

f) $-40 < x < 88$

d) $x > 40$

$$29) \quad f(x) = 4x - 1 \quad g(x) = -2x + 5$$

$$a) \quad 4x - 1 = 0$$

$$d) \quad 4x - 1 \leq -2x + 5$$

$$b) \quad 4x - 1 > 0$$

$$c) \quad 4x - 1 = -2x + 5$$

SECTIONS 3.1B

LINEAR FUNCTIONS, THEIR
PROPERTIES, & LINEAR MODELS

OBJECTIVE 4

BUILD LINEAR MODELS WITH VERBAL DESCRIPTIONS

EXAMPLE

Supply and Demand

The quantity supplied of a good is the amount of a product that a company is willing to make available for sale at a given price. The quantity demanded of a good is the amount of a product that consumers are willing to purchase at a given price. Suppose that the quantity supplied, S , and quantity demanded, D , of cellular telephones each month are given by the following functions:

$$S(p) = 60p - 900$$

$$D(p) = -15p + 2850$$

where p is the price (in dollars) of the telephone.

- (a) The **equilibrium price** of a product is defined as the price at which quantity supplied equals quantity demanded. That is, the equilibrium price is the price at which $S(p) = D(p)$. Find the equilibrium price of cellular telephones. What is the equilibrium quantity, the amount demanded (or supplied), at the equilibrium price?
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$$\boxed{p=50}$$
$$\begin{array}{r} 60p - 900 = -15p + 2850 \\ +15p \quad +900 \quad +15p \quad +900 \\ \hline 75p = 3750 \end{array}$$

- (b) Determine the prices for which quantity supplied is greater than quantity demanded. That is, solve the inequality $S(p) > D(p)$.

$$\begin{array}{r} 60p - 900 > -15p + 2850 \\ +15p \quad +900 \quad +15p \quad +900 \\ \hline 75p > 3750 \end{array} \quad \boxed{p > 50}$$

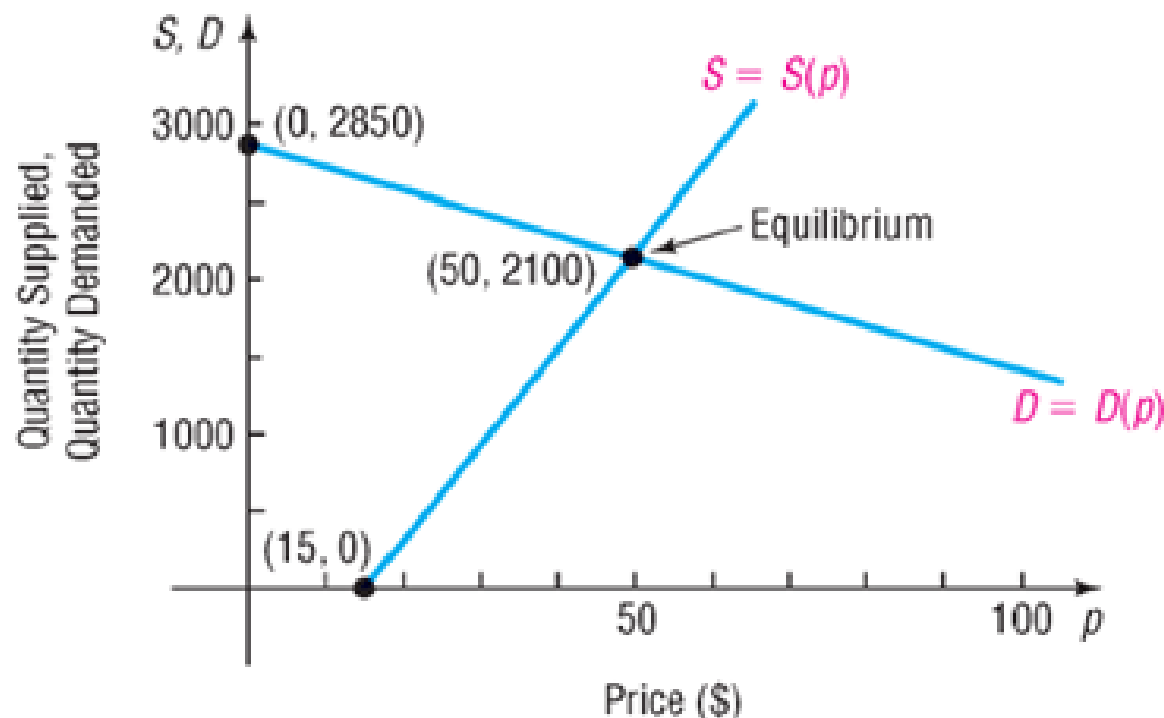
$$p > \$50$$

If the company charges more than \$50 per phone, then quantity supplied will exceed quantity demanded. In this case the company will have excess phones in inventory.

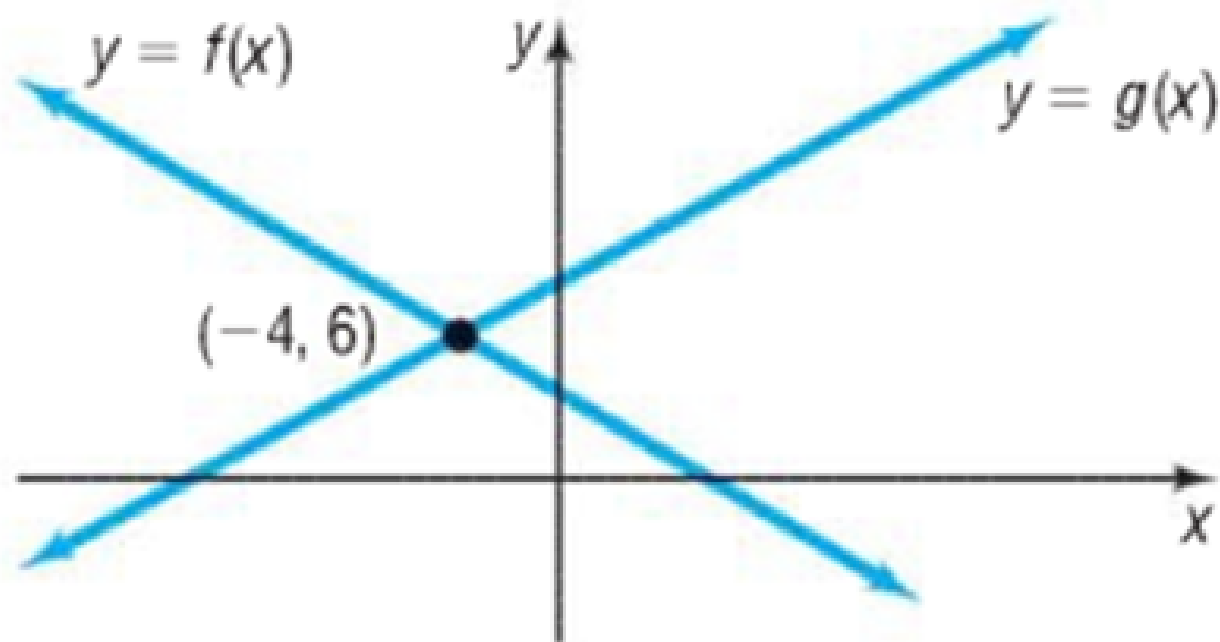
$$S(p) = 60p - 900$$

$$D(p) = -15p + 2850$$

(c) Graph $S = S(p)$, $D = D(p)$ and label the equilibrium price.



33. In parts (a) and (b) use the following figure.



- (a) Solve the equation: $f(x) = g(x)$. -4
- (b) Solve the inequality: $f(x) > g(x)$. $x > -4$

21) linear $y = -3x - 2$

23) Non linear

25) Non linear

27) linear $y = 8$