

HW

4.2.3
4-60 b) 4+65
(also 4-59)

4-59

Find the interception point.

a) $2y - x = 5$
 $-3y + x = -9$

$$\begin{array}{r} 2y - x = 5 \\ -2y \quad -2y \\ \hline -x = 5 - 2y \\ x = -5 + 2y \end{array}$$

$$\begin{array}{r} -3y + x = -9 \\ +3y \quad +3y \\ \hline x = -9 + 3y \end{array}$$

$$\begin{array}{r} -5 + 2y = -9 + 3y \\ -2y \quad -2y \\ \hline -5 = -9 + y \\ +9 \quad +9 \\ \hline 4 = y \end{array}$$

$$\begin{array}{r} 2(4) - x = 5 \\ 4 - x = 5 \\ +x \quad +x \\ \hline 4 = 5 + x \\ -5 \quad -5 \\ \hline -1 = x \end{array}$$

(4, -1)

$$\begin{array}{r} 4 = 5 + x \\ -5 \quad -5 \\ \hline -1 = x \end{array}$$

b.) $2x - 4y = 14$
 $-2x \quad -2x$
$$\begin{array}{r} 2x - 4y = 14 \\ -2x \quad -2x \\ \hline -4y = 14 - 2x \\ 4y = 14 + 2x \end{array}$$

$$\begin{array}{r} 4y - x = -3 \\ +x \quad +x \\ \hline 4y = -3 + x \end{array}$$

$$\begin{array}{r} 4y + 11 = -3 \\ -11 \quad -11 \\ \hline 4y = -14 \\ \text{plug in } 4y = -14 \\ \frac{4y}{4} = \frac{-14}{4} \\ y = -3.5 \end{array}$$

$$\begin{array}{r} -3 + x = -14 + 2x \\ -x \quad -x \\ \hline -3 = -14 + x \\ +14 \quad +14 \\ \hline 11 = x \end{array}$$

(1, 3.5)

c.) $3x + 4y = 1$
 $-3x - 4y = -5$
$$\begin{array}{r} 3x + 4y = 1 \\ -3x - 4y = -5 \\ \hline 4y = 1 - 3x \end{array}$$

$$\begin{array}{r} 2x + 4y = 2 \\ -2x \quad -2x \\ \hline 4y = 2 - 2x \end{array}$$

$$\begin{array}{r} 2(-1) + 4y = 2 \\ -2 + 4y = 2 \\ +2 \quad +2 \\ \hline 4y = 4 \\ y = 1 \end{array}$$

$$\begin{array}{r} 1 - 3x = 2 - 2x \\ +3x \quad +3x \\ \hline 1 = 2 + x \\ -2 \quad -2 \\ \hline -1 = x \end{array}$$

4-60 Find the intersection point

a) $x = -2y - 3$

$$\begin{array}{r} 4y - x = 9 \\ -4y \quad -4y \\ \hline -x = 9 - 4y \\ x = -9 + 4y \end{array}$$

$$\begin{array}{r} -9 + 4y = -2y - 3 \\ +2y \quad +2y \\ \hline -9 + 6y = -3 \\ +9 \quad +9 \\ \hline 6y = 6 \\ y = 1 \end{array}$$

(-5, 1)

$$\begin{array}{r} x = -2(1) - 3 \\ x = -2 - 3 \\ x = -5 \end{array}$$

★ 4-60 cont'd on back

4-61

Solve the system, graph the two lines, and explain the graph.

$$y = -2x + 5$$

$$2y + 4x = 10$$

↑ substitute

$$\begin{array}{l} \checkmark: y = -2(0) + 5 \\ y = 5 \end{array}$$

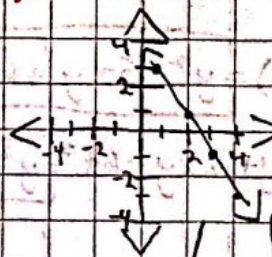
a.) $2(-2x + 5) + 4x = 10$
 $-4x + 10 + 4x = 10$
 $0 = 0$

$$\begin{array}{l} 2(5) + 4(0) = 10 \\ 10 = 10 \end{array}$$

So $x = \text{all} = \text{infinite solutions}$

$$2y + 4x = 10 \Rightarrow y = 5 - 2x$$

b.)



The lines coincide!
They are the same line!

x	y	x	y
1	3	1	3
2	1	2	1
3	-1	3	-1
4	-3	4	-3

c.) The answer for a was $x = \text{all}$ because they are the same line and therefore always intersect. This system has infinite solutions.

4-62 Cafe sells pizza & burritos.
How many pizzas?

Cont'd on back →

a) $P = 2b - 20$
 $P(2.50) + b(3.00) = 358$

$$\begin{array}{r} 2.5(2b - 20) + 3b = 358 \\ 5b - 50 + 3b = 358 \\ +50 \quad +50 \\ \hline 8b = 408 \\ b = 51 \end{array}$$

$$\begin{array}{l} P = 51(2) - 20 \\ P = 102 - 20 \\ P = 82 \end{array}$$

4-63 4-inch is \$2.95, how much is 50-inch? solve it!

$$\frac{4 \times 295}{295 \times 12.5} ?$$

$$\begin{array}{r} 4 \\ 2.95 \\ \times 12.5 \\ \hline 1475 \\ 15900 \\ 29500 \\ \hline 36875 \end{array}$$

They should charge

$$\approx \$36.88$$

4-65

a) The line has a fairly linear moderately strong negative association with a few outliers.

b) The new 2800 pound SUV will have about a 25 mpg according to the model.

4-64 Use generic rectangles to solve!

a) $(x+2)(x-5) = x^2 - 3x - 10$

$$\begin{array}{r} x \quad x^2 \quad -5x \\ 2 \quad 2x \quad -10 \\ \hline x \quad -5 \end{array} = x^2 + 2x - 5x - 10 = x^2 - 3x - 10$$

b) $(y+2x)(y+3x) = y^2 + 5xy + 6x^2$

$$\begin{array}{r} y \quad y^2 \quad 3xy \\ 2x \quad 2xy \quad 6x^2 \\ \hline y \quad 3x \end{array} = y^2 + 3xy + 2xy + 6x^2 = y^2 + 5xy + 6x^2$$

c) $(3y-8)(-x+y) = -3xy + 8x + 3y^2 - 8y$

$$\begin{array}{r} 3y \quad 3yx \quad 3y^2 \\ -8 \quad -8x \quad -8y \\ \hline -x \quad y \end{array} = -3xy + 8x + 3y^2 - 8y$$

d) $(x-3y)(x+3y) = x^2 - 9y^2$

$$\begin{array}{r} x \quad x^2 \quad 3yx \\ -3y \quad -3yx \quad -9y^2 \\ \hline x \quad 3y \end{array} = x^2 - 3yx - 3yx - 9y^2 = x^2 - 9y^2$$

4-60 cont'd

b) $x + 5y = 8$ $-x + 2y = -1$

$$\begin{array}{r} x + 5y = 8 \\ -5y - 5y \\ \hline -x = 8 - 5y \end{array}$$

$$\begin{array}{r} -x = 8 - 5y \\ +5y \quad +5y \\ \hline -x + 7y = 8 \end{array}$$

$$\begin{array}{r} -x + 7y = 8 \\ +x \quad -x \\ \hline 7y = 8 \end{array}$$

$$\begin{array}{r} -x + 2y = -1 \\ -2y \quad -2y \\ \hline -x = -1 - 2y \\ x = 1 + 2y \end{array}$$

$$\begin{array}{r} x + 5(1) = 8 \\ x + 5 = 8 \\ \hline x = 3 \end{array}$$

$$(3, 1)$$

c) $4x - 2y = 5$ $y = 2x + 10$

$$\begin{array}{r} 4x - 2y = 5 \\ +2y \quad +2y \\ \hline 4x = 5 + 2y \end{array}$$

$$\begin{array}{r} 4x = 5 + 2y \\ -2x \quad -2x \\ \hline -2x = 5 - 2y \\ -2y \quad -2y \\ \hline 2x = 5 - 2y \\ \times 2 \quad \times 2 \\ \hline 4x = 10 - 4y \end{array}$$

$$\begin{array}{r} -2x = 5 - 2y \\ -2x = 10 - 4y \\ \hline 2x = -10 + 4y \\ \times 2 \quad \times 2 \\ \hline 4x = -20 + 8y \end{array}$$

no solution

↳ No intersecting point

no solution