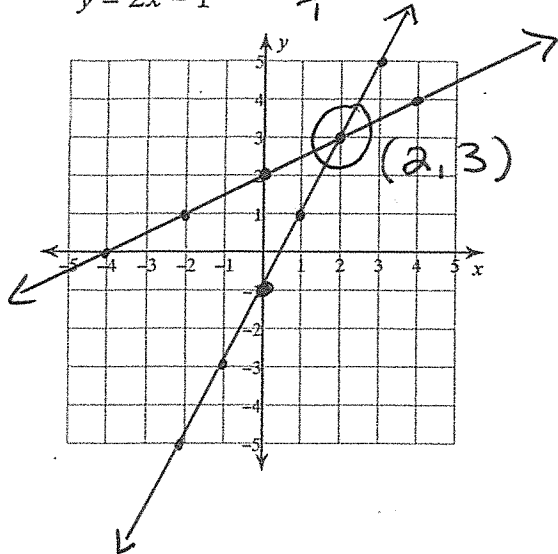


Unit 6 Review

Solve each system by graphing.

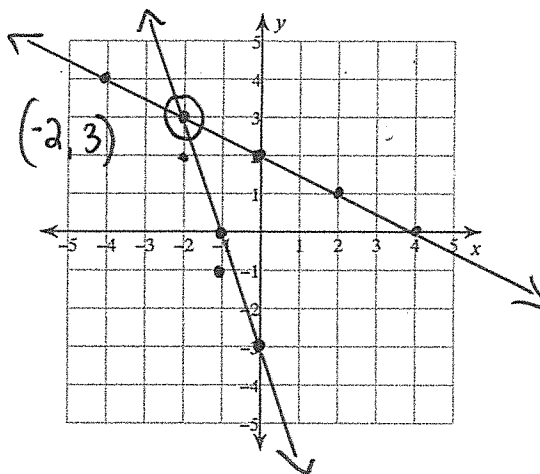
1)  $y = \frac{1}{2}x + 2$   $m = \frac{1}{2}$   $b = 2$

$y = 2x - 1$   $m = \frac{2}{1}$   $b = -1$



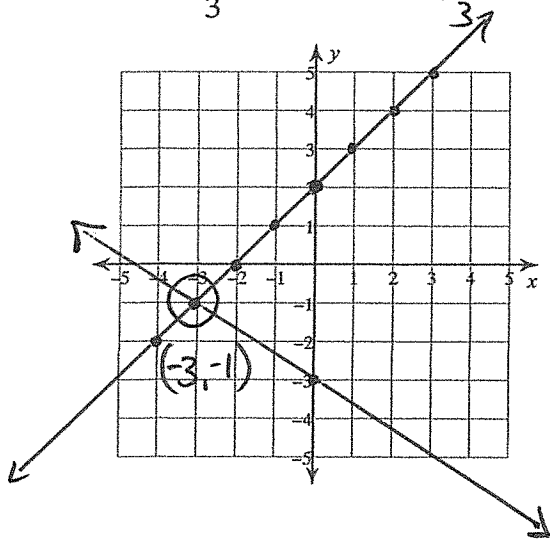
2)  $y = -\frac{1}{2}x + 2$   $m = -\frac{1}{2}$   $b = 2$

$y = -3x - 3$   $m = -\frac{3}{1}$   $b = -3$



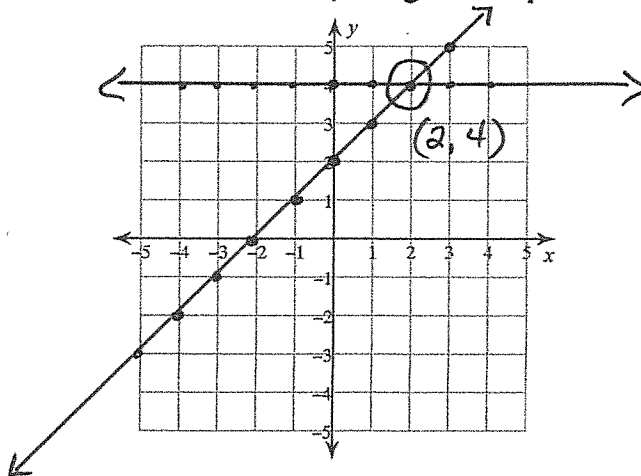
3)  $y = x + 2$   $m = \frac{1}{1}$   $b = 2$

$y = -\frac{2}{3}x - 3$   $m = -\frac{2}{3}$   $b = -3$



4)  $y = x + 2$   $m = \frac{1}{1}$   $b = 2$

$y = 4$   $m = 0$   $b = 4$



Solve each system by substitution.

8)  $y = 3x + 19$   
 $-4x - y = 9$

①  $-4x - (3x + 19) = 9$   
 $-4x - 3x - 19 = 9$   
 $-7x - 19 = 9$   
 $+ 19 + 19$   
 $-7x = 28$   
 $\frac{-7x}{-7} = \frac{28}{-7}$   
 $x = -4$

②  $y = 3x + 19$   
 $y = 3(-4) + 19$   
 $y = -12 + 19$   
 $y = 7$   
**(-4, 7)**

10)  $y = 3x - 1$   
 $4x + 5y = 14$

①  $4x + 5(3x - 1) = 14$   
 $4x + 15x - 5 = 14$   
 $19x - 5 = 14$   
 $+ 5 + 5$   
 $19x = 19$   
 $x = 1$

②  $y = 3x - 1$   
 $y = 3(1) - 1$   
 $y = 3 - 1$   
 $y = 2$   
**(1, 2)**

12)  $y = -4$   
 $6x - 7y = 22$

①  $6x - 7(-4) = 22$   
 $6x + 28 = 22$   
 $- 28 - 28$   
 $6x = -6$   
 $\frac{6x}{6} = \frac{-6}{6}$   
 $x = -1$

**(-1, -4)**

14)  $3x + y = -23 \Rightarrow y = -3x - 23$   
 $4x - 7y = -14$

①  $4x - 7(-3x - 23) = -14$   
 $4x + 21x + 161 = -14$   
 $25x + 161 = -14$   
 $- 161 - 161$   
 $25x = -175$   
 $\frac{25x}{25} = \frac{-175}{25}$   
 $x = -7$

②  $y = -3x - 23$   
 $y = -3(-7) - 23$   
 $y = 21 - 23$   
 $y = -2$   
**(-7, -2)**

9)  $-7x + 2y = -6$   
 $y = -2x + 8$

①  $-7x + 2(-2x + 8) = -6$   
 $-7x - 4x + 16 = -6$   
 $-11x + 16 = -6$   
 $- 16 - 16$   
 $-11x = -22$   
 $\frac{-11x}{-11} = \frac{-22}{-11}$   
 $x = 2$

②  $y = -2(2) + 8$   
 $y = -4 + 8$   
 $y = 4$   
**(2, 4)**

11)  $21x + 3y = 6$   
 $y = -7x - 1$

①  $21x + 3(-7x - 1) = 6$   
 $21x - 21x - 3 = 6$   
 $0 - 3 = 6$   
 $-3 = 6$   
**FALSE**  
**NO SOLUTION**

13)  $-6x + 3y = 30$   
 $-2x + y = 10 \Rightarrow y = 2x + 10$   
 (Solve for y)

①  $-6x + 3(2x + 10) = 30$   
 $-6x + 6x + 30 = 30$   
 $0 + 30 = 30$   
 $- 30 - 30$   
 $0 = 0$   
**TRUE**  
**INFINITE SOLUTIONS**

Solve each system by elimination.

15)  $-4x + y = -12 \Rightarrow 10(-4x + y) = -120$   
 $6x - 10y = 18$   
 $-40x + 10y = -120$

$+ \frac{-40x + 10y}{-34x} = \frac{-120}{-102}$   
 $\frac{-34x}{-34} = \frac{-102}{-34}$   
 $x = 3$

②  $-4x + y = -12$   
 $-4(3) + y = -12$   
 $-12 + y = -12$   
 $+ 12 + 12$   
 $y = 0$   
**(3, 0)**

16)  $-9x + 12y = -6$   
 $-2(-5x + 6y) = -4$

$10x - 12y = 8$   
 $-9x + 12y = -6$   
 $\frac{10x - 12y}{-9x + 12y} = \frac{8}{-6}$   
 $x = 2$

②  $-9(2) + 12y = -6$   
 $-18 + 12y = -6$   
 $+ 18 + 18$   
 $12y = 12$   
 $\frac{12y}{12} = \frac{12}{12}$   
 $y = 1$   
**(2, 1)**

17)  $-3x + 9y = 6 \Rightarrow -2(-3x + 9y) = -12$   
 $-6x + 18y = 18$   
 $6x - 18y = -12$   
 $6x - 18y = -12$

$0 + 0 = 6$

**0 = 6**  
**FALSE**

**NO SOLUTION**

18)  $18x + 9y = -27$   
 $2(-9x + 4y) = 22$

$-18x + 8y = 44$   
 $18x + 9y = -27$   
 $\frac{-18x + 8y}{18x + 9y} = \frac{44}{-27}$   
 $17y = 17$   
 $\frac{17y}{17} = \frac{17}{17}$   
 $y = 1$

②  $18x + 9y = -27$   
 $18x + 9(1) = -27$   
 $18x + 9 = -27$   
 $- 9 - 9$   
 $18x = -36$   
 $\frac{18x}{18} = \frac{-36}{18}$   
 $x = -2$   
**(-2, 1)**

- 25) Lisa and Jacob are selling wrapping paper for a school fundraiser. Customers can buy rolls of plain wrapping paper and rolls of shiny wrapping paper. Lisa sold 5 rolls of plain wrapping paper and 10 rolls of shiny wrapping paper for a total of \$175. Jacob sold 4 rolls of plain wrapping paper and 5 rolls of shiny wrapping paper for a total of \$98. Find the cost each of one roll of plain wrapping paper and one roll of shiny wrapping paper.

P = PLAIN PAPER COST  
S = SHINY PAPER COST

$$\begin{aligned} 5P + 10S &= 175 \Rightarrow 5P + 10S = 175 \\ -2(4P + 5S &= 98) \Rightarrow -8P - 10S = -196 \\ \hline -3P &= 21 \\ -3 & \quad -3 \\ \hline P &= 7 \end{aligned}$$

SUBSTITUTE

$$\begin{aligned} 5P + 10S &= 175 \\ 5(7) + 10S &= 175 \\ 35 + 10S &= 175 \\ -35 & \quad -35 \\ \hline 10S &= 140 \\ \frac{10}{10} & \quad \frac{10}{10} \\ \hline S &= 14 \end{aligned}$$

**ELIMINATION**

- 26) The local amusement park is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 10 vans and 4 buses with 346 students. High School B rented and filled 3 vans and 8 buses with 471 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

V = STUDENTS IN VANS  
B = STUDENTS IN BUSES

$$\begin{aligned} -2(10V + 4B &= 346) \Rightarrow -20V - 8B = -692 \\ 3V + 8B &= 471 \Rightarrow +3V + 8B = 471 \\ \hline -17V &= 221 \\ -17 & \quad -17 \\ \hline V &= 13 \end{aligned}$$

SUBSTITUTE

$$\begin{aligned} 3(13) + 8B &= 471 \\ 39 + 8B &= 471 \\ -39 & \quad -39 \\ \hline 8B &= 432 \\ \frac{8}{8} & \quad \frac{8}{8} \\ \hline B &= 54 \end{aligned}$$

**ELIMINATION**

- 27) Amanda and Krystal are selling fruit for a school fundraiser. Customers can buy small boxes of grapefruit and large boxes of grapefruit. Amanda sold 12 small boxes of grapefruit and 10 large boxes of grapefruit for a total of \$246. Krystal sold 4 small boxes of grapefruit and 5 large boxes of grapefruit for a total of \$107. What is the cost each of one small box of grapefruit and one large box of grapefruit?

S = COST OF SMALL BOX  
L = COST OF LARGE BOX

$$\begin{aligned} 12S + 10L &= 246 \Rightarrow 12S + 10L = 246 \\ -2(4S + 5L &= 107) \Rightarrow -8S - 10L = -214 \\ \hline 4S &= 32 \\ \frac{4}{4} & \quad \frac{4}{4} \\ \hline S &= 8 \end{aligned}$$

SUBSTITUTE

$$\begin{aligned} 4(8) + 5L &= 107 \\ 32 + 5L &= 107 \\ -32 & \quad -32 \\ \hline 5L &= 75 \\ \frac{5}{5} & \quad \frac{5}{5} \\ \hline L &= 15 \end{aligned}$$

**ELIMINATION**

- 28) Heather and Cody are selling flower bulbs for a school fundraiser. Customers can buy bags of windflower bulbs and packages of crocus bulbs. Heather sold 10 bags of windflower bulbs and 10 packages of crocus bulbs for a total of \$370. Cody sold 5 bags of windflower bulbs and 3 packages of crocus bulbs for a total of \$145. What is the cost each of one bag of windflower bulbs and one package of crocus bulbs?

W = COST OF WINDFLOWER BULBS  
C = COST OF CROCUS BULBS

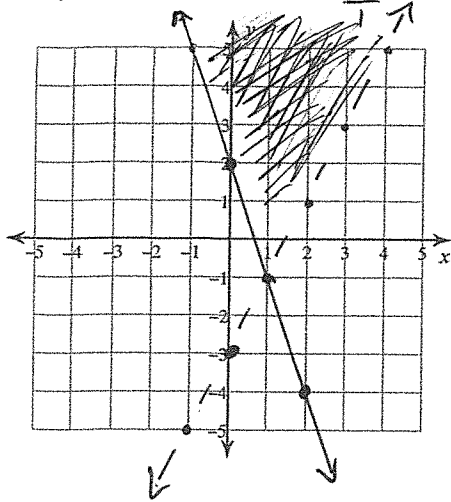
$$\begin{aligned} 10W + 10C &= 370 \Rightarrow 10W + 10C = 370 \\ -2(5W + 3C &= 145) \Rightarrow -10W - 6C = -290 \\ \hline 4C &= 80 \\ \frac{4}{4} & \quad \frac{4}{4} \\ \hline C &= 20 \end{aligned}$$

SUBSTITUTE

$$\begin{aligned} 5W + 3(20) &= 145 \\ 5W + 60 &= 145 \\ -60 & \quad -60 \\ \hline 5W &= 85 \\ \frac{5}{5} & \quad \frac{5}{5} \\ \hline W &= 17 \end{aligned}$$

Sketch the solution to each system of inequalities.

29)  $y \geq -3x + 2$     $m = -\frac{3}{1}$     $b = 2$   
 $y > 2x - 3$     $m = \frac{2}{1}$     $b = -3$



30)  $y < \frac{1}{2}x - 1$     $m = \frac{1}{2}$     $b = -1$   
 $y > 2x + 2$     $m = \frac{2}{1}$     $b = 2$

