

On the same graph (use at least $\frac{1}{2}$ page), graph the following lines:

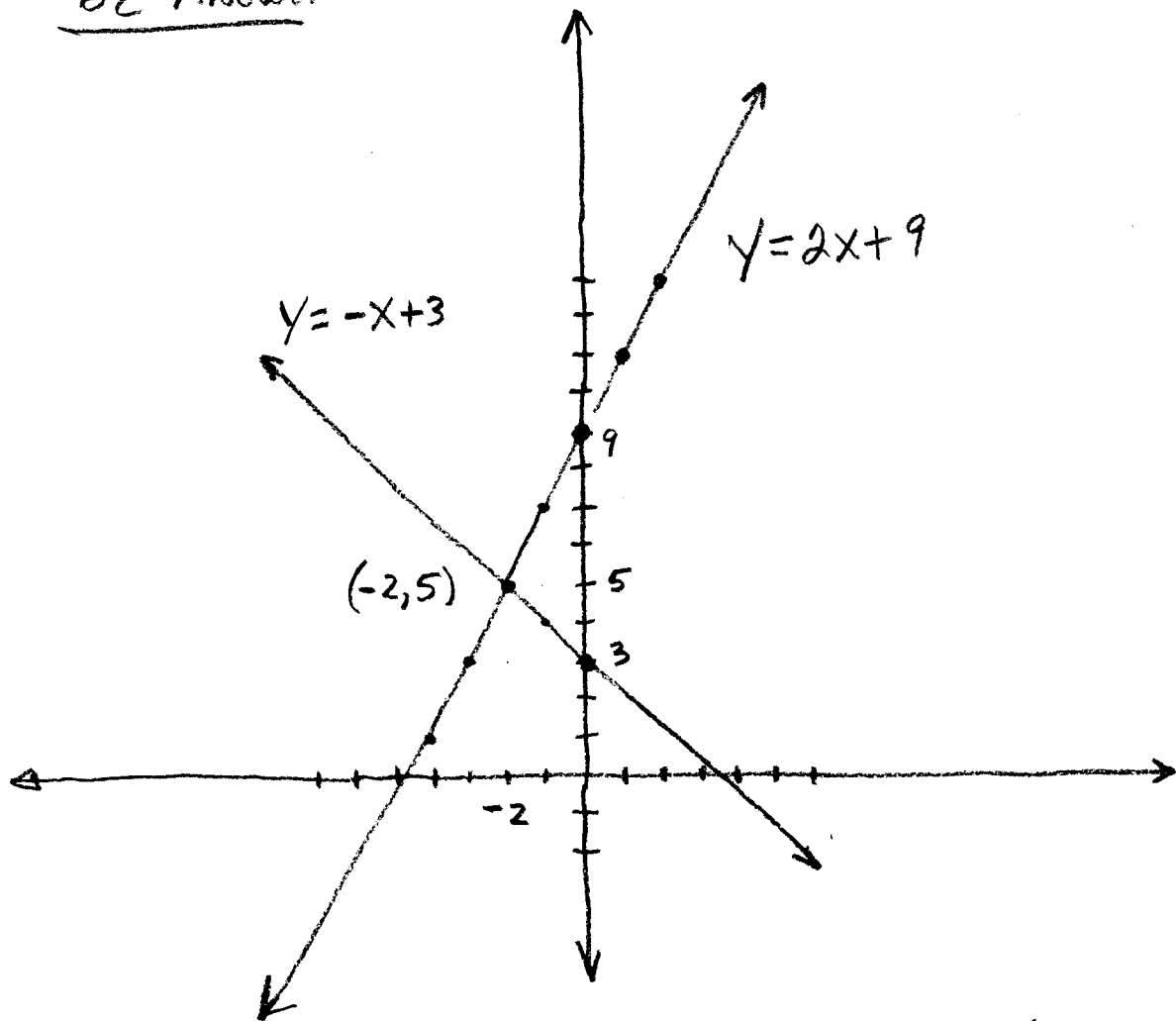
① $y = 2x + 9$

② $y = -x + 3$

③ Where do the lines in ① & ② cross? That is, what is the point of intersection (x, y) ?

• Hw Review

BE Answer

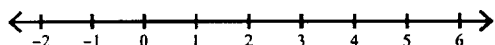


Is there a way to find this point of intersection (x, y) using Algebra?

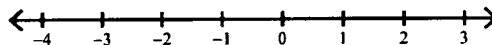
HW Practice

Solve each compound inequality and graph its solution.

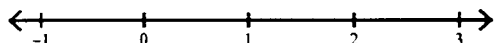
1) $4b - 3 > 5b - 4$ or $5b - 1 > 5 + 3b$



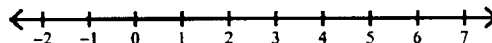
2) $x + 1 \leq 6x + 6$ and $4 + 5x > 6x + 3$



3) $x - 6 < 5x - 6 < 3x - 4$



4) $3v - 3 \leq 2 + 2v \leq 6v + 6$



Write the slope-intercept form of the equation of the line through the given points.

5) through: (0, 1) and (5, 4)

6) through: (0, 2) and (1, 0)

7) through: (-1, -5) and (0, 2)

8) through: (-3, -4) and (0, 1)

9) through: (0, 5) and (3, -1)

10) through: (-4, 3) and (0, 4)

Write the slope-intercept form of the equation of the line described.

11) through: (2, 5), parallel to $y = \frac{9}{2}x + 5$

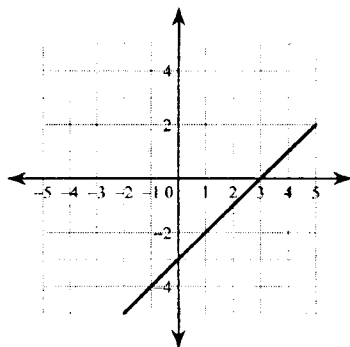
12) through: (5, -2), parallel to $y = \frac{3}{5}x + 5$

13) through: (-1, 1), perp. to $y = \frac{1}{4}x + 5$

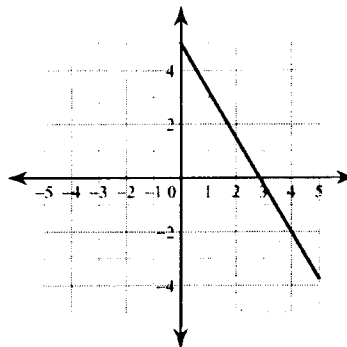
14) through: (-4, -3), perp. to $y = -4x + 4$

Write the slope-intercept form of the equation of each line.

15)



16)



Answers to HW Practice (ID: 1)

1) $b < 1$ or $b > 3$:

2) $-1 \leq x < 1$:

4) $-1 \leq v \leq 5$:

3) $0 < x < 1$:

5) $y = \frac{3}{5}x + 1$

6) $y = -2x + 2$

7) $y = 7x + 2$

8) $y = \frac{5}{3}x + 1$

9) $y = -2x + 5$

10) $y = \frac{1}{4}x + 4$

11) $y = \frac{9}{2}x - 4$

12) $y = \frac{3}{5}x - 5$

13) $y = -4x - 3$

14) $y = \frac{1}{4}x - 2$

15) $y = x - 3$

16) $y = -\frac{7}{4}x + 5$

Solving Systems of Linear Equations

EBS $\Rightarrow$ Elimination By Substitution

Key: solve equation ① or ② for $\textcircled{x}$ or $\textcircled{y}$
then substitute into the other
equation to eliminate one variable

$$\begin{aligned} \textcircled{1} \quad \textcircled{y}_1 &= m\textcircled{x}_1 + b \\ \textcircled{2} \quad \textcircled{y}_2 &= m\textcircled{x}_2 + b \end{aligned} \Rightarrow \textcircled{4 \text{ choices}}$$

EX $\begin{cases} \textcircled{1} \quad y = \textcircled{2x + 9} \\ \textcircled{2} \quad \textcircled{y} = -x + 3 \end{cases}$ Use EITHER y_1 or y_2

$$\begin{array}{rcl} 2x + 9 & = & -x + 3 \\ +x & & +x \end{array}$$

y is eliminated,
Solve for x

$$\begin{array}{rcl} 3x + 9 & = & 3 \\ -9 & & -9 \end{array}$$

$$\frac{3x}{3} = \frac{-6}{3}$$

$$\textcircled{x = -2}$$

Use EITHER eg ① or ②
to find y

$$\begin{aligned} \textcircled{1} \quad y &= 2(-2) + 9 \\ y &= -4 + 9 \\ \textcircled{y} &= 5 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad y &= -(-2) + 3 \\ \textcircled{y} &= 5 \end{aligned}$$

ANS $\Rightarrow$ $\boxed{(-2, 5)}$

EBA $\Rightarrow$ Elimination by Addition

Key: get X, Y, and numbers lined up, then multiply none, 1, or both equations to get equal and opposite coefficients for the X or the Y. Then add equations 2 choices to eliminate X or Y.

ⓔx
Eliminate
Y

$$\begin{array}{rcl} Y = 2x + 9 & \xrightarrow{(-1)} & -Y = -2x - 9 \\ Y = -x + 3 & \longrightarrow & Y = -x + 3 \\ \hline & & 0 = -3x - 6 \end{array}$$

$$0 = -3x - 6$$

$$6 = -3x$$

$$\boxed{-2 = x} \quad \checkmark$$

↗ go back to either original eq. to find Y

ⓔx
Eliminate
X

$$\begin{array}{rcl} Y = 2x + 9 & \longrightarrow & Y = 2x + 9 \\ Y = -x + 3 & \xrightarrow{(2)} & 2Y = -2x + 6 \\ \hline & & 3Y = 15 \end{array}$$

$$3Y = 15$$

$$\boxed{Y = 5} \quad \checkmark$$

↗ go back to either original eq. to find X

EX $x + y = 7 \rightarrow x = 7 - y$
 EBS $2x = 11 - y$

$$2(7 - y) = 11 - y$$

$$\begin{array}{rcl} 14 - 2y & = & 11 - y \\ + 2y & & + 2y \end{array}$$

$$14 = 11 + y$$

$$\therefore y = 3$$

$$x = 7 - 3$$

$$x = 4 \quad \boxed{(4, 3)}$$

EX $2x - 3y = 3 \rightarrow 2x - 3y = 3$
 EBA $x + y = 14 \xrightarrow{(-2)} -2x - 2y = -28$

$$-5y = -25$$

$$y = 5$$

$$x = 14 - y$$

$$x = 9 \quad \boxed{(9, 5)}$$

Two special cases: Parallel Lines $\Rightarrow$ No solution

Same Lines $\Rightarrow$ All (x, y) pairs
 ∞
 on the line.

Homework: Pg 743 #22, 23, 24.