

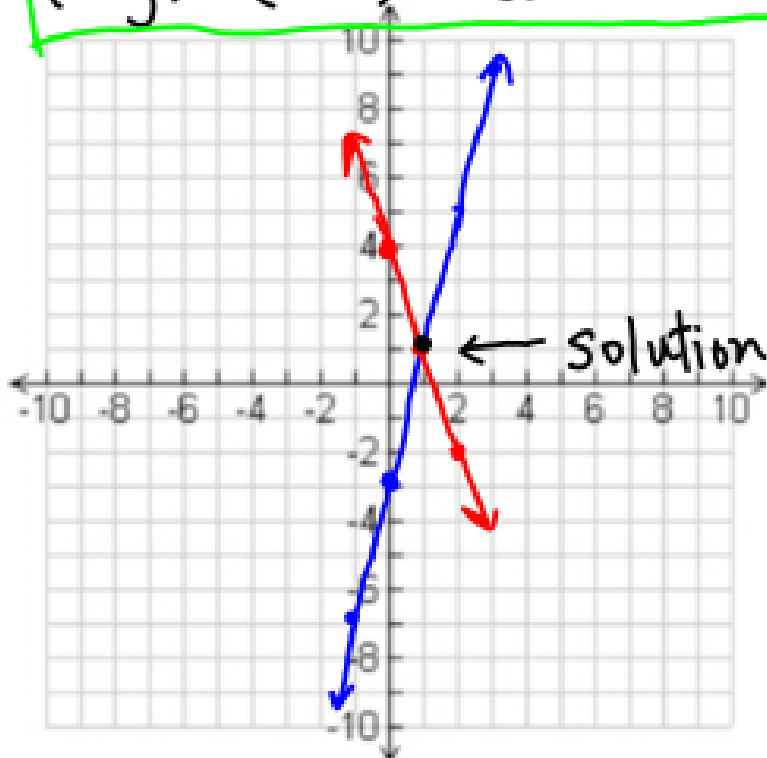
5.1-5.3 Review

Solve each system of equations by **graphing**. Clearly identify your solution.

$$1) \begin{cases} 4x - y = 3 \\ 3x + y = 4 \end{cases}$$

$-y = -4x + 3$
 $y = 4x - 3$ ①
 $y = -3x + 4$ ②

$(x, y) = (1, 1)$; Consistent Independent

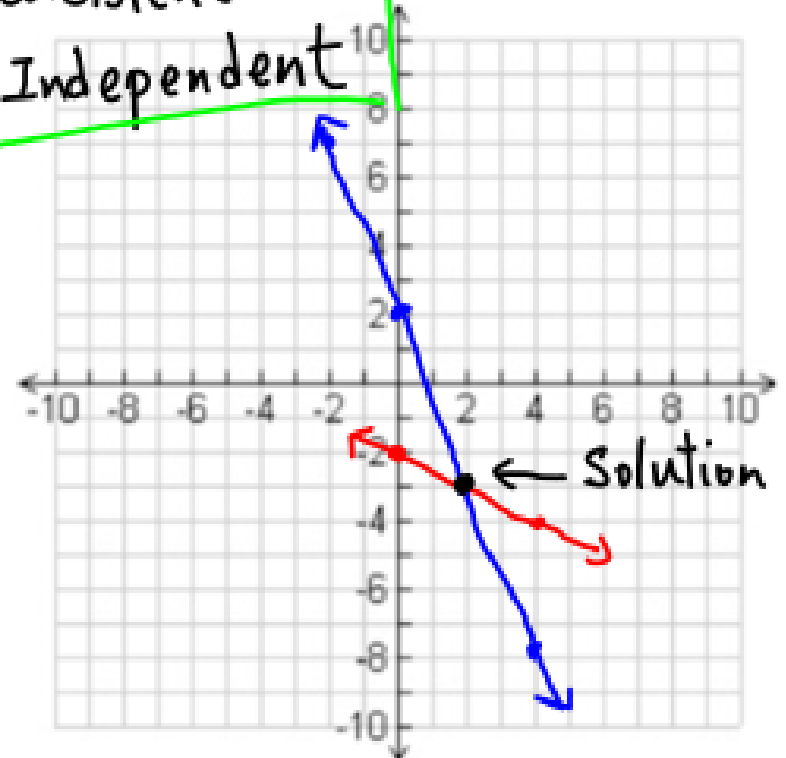


$$2) \begin{cases} 5x + 2y = 4 \\ 3x + 6y = -12 \end{cases}$$

$2y = -5x + 4$
 $y = -\frac{5}{2}x + 2$
 $6y = -3x - 12$
 $y = -\frac{1}{2}x - 2$

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

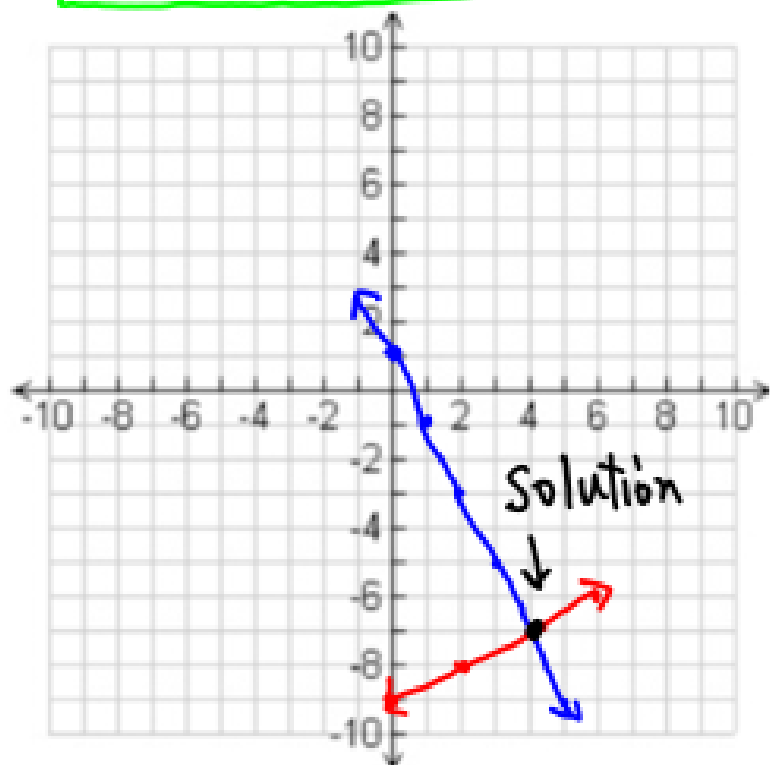
Consistent Independent



$$3) \begin{cases} 2x + y = 1 \rightarrow y = -2x + 1 \\ x - 2y = 18 \rightarrow -2y = -x + 18 \\ y = \frac{1}{2}x - 9 \end{cases}$$

$$(x, y) = (4, -7)$$

Consistent Independent

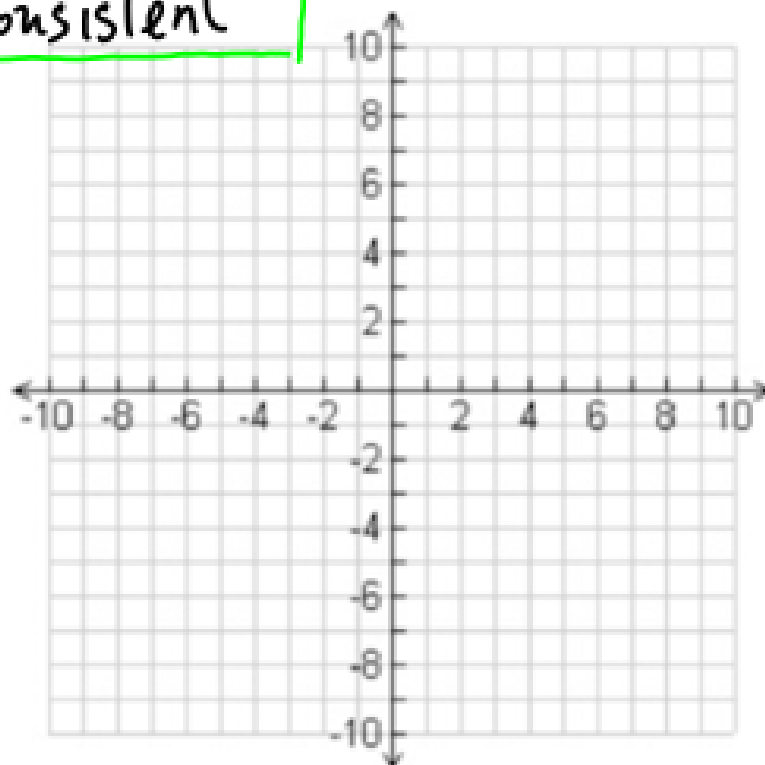


$$4) \begin{cases} x - 3y = 3 \rightarrow -3y = -x + 3 \\ 2x - 6y = -24 \rightarrow y = \frac{1}{3}x - 1 \\ -6y = -2x - 24 \\ y = \frac{1}{3}x + 4 \end{cases}$$

Same Slope.
Parallel.

$$(x, y) = \{ \emptyset \}$$

Inconsistent



Solve each system of equations by **substitution**. Clearly identify your solution.

$$5) \begin{cases} x + 3y = 9 \rightarrow x = -3y + 9 \\ 4x - 2y = -6 \end{cases}$$

$$4(-3y + 9) - 2y = -6$$

$$-12y + 36 - 2y = -6$$

$$-14y + 36 = -6$$

$$\begin{array}{r} -36 \quad -36 \\ \hline \end{array}$$

$$-14y = -42$$

$$y = 3$$

$$x = -3(3) + 9 = -9 + 9 = 0$$

$(x, y) = (0, 3)$; Consistent Independent

$$6) \begin{cases} 2x + 5y = -7 \\ 7x + y = -8 \rightarrow y = -7x - 8 \end{cases}$$

$$2x + 5(-7x - 8) = -7$$

$$2x - 35x - 40 = -7$$

$$-33x - 40 = -7$$

$$-33x = 33$$

$$x = -1$$

$$y = -7(-1) - 8 = 7 - 8 = -1$$

$$(x, y) = (-1, -1)$$

Consistent Independent

$$7) \begin{cases} x - 3y = -24 \rightarrow x = 3y - 24 \\ 5x + 8y = -5 \end{cases}$$

$$5(3y - 24) + 8y = -5$$

$$15y - 120 + 8y = -5$$

$$23y - 120 = -5$$

$$23y = 115$$

$$y = 5$$

$$x = 3(5) - 24 = 15 - 24 = -9$$

$$(x, y) = (-9, 5)$$

Consistent Independent

$$8) \begin{cases} 5x + 3y = 15 \\ x - 6y = 3 \rightarrow x = 6y + 3 \end{cases}$$

$$5(6y + 3) + 3y = 15$$

$$30y + 15 + 3y = 15$$

$$33y + 15 = 15$$

$$33y = 0$$

$$y = 0$$

$$x = 6(0) + 3 = 3$$

$$(x, y) = (3, 0)$$

Consistent Independent

Solve each system of equations by **elimination**. Clearly identify your solution.

$$9) \begin{cases} x + y = -5 \\ x - y = 9 \end{cases} \text{ Add}$$

$$2x = 4$$

$$x = 2$$

$$2 + y = -5$$

$$y = -7$$

$$(x, y) = (2, -7)$$

Consistent Independent

$$10) \begin{cases} x + 5y = 20 \\ 2x - 7y = -45 \end{cases} \text{ Add}$$
$$-2x - 10y = -40$$

$$-17y = -85$$

$$y = 5$$

$$x + 5(5) = 20$$

$$x + 25 = 20$$

$$x = -5$$

$$(x, y) = (-5, 5)$$

Consistent Independent

$$11) \begin{cases} -4(4x + 3y = -1) \\ 3(5x + 4y = 1) \end{cases}$$

$$\begin{array}{r} -16x - 12y = 4 \\ 15x + 12y = 3 \end{array} \left. \vphantom{\begin{array}{r} -16x - 12y = 4 \\ 15x + 12y = 3 \end{array}} \right] \text{Add}$$

$$-x = 7$$

$$x = -7$$

$$4(-7) + 3y = -1$$

$$-28 + 3y = -1$$

$$3y = 27$$

$$y = 9$$

$$(x, y) = (-7, 9)$$

Consistent

Independent

$$12) \begin{cases} \cancel{x - 2y - 3} \text{ rearrange !!} \\ 2x - 3y = -5 \\ -2(x - 2y = -3) \end{cases} \left. \vphantom{\begin{cases} \cancel{x - 2y - 3} \\ 2x - 3y = -5 \\ -2(x - 2y = -3) \end{cases}} \right] \text{Add}$$

$$-2x + 4y = 6$$

$$y = 1$$

$$x = 2(1) - 3 = -1$$

$$(x, y) = (-1, 1)$$

Consistent Independent

Solve each system of equations by **any method**. Clearly identify your solution.

$$13) \begin{cases} x - 4y = 7 \\ 2x - 6y = 12 \end{cases} \quad \text{Add}$$
$$\begin{array}{r} x - 4y = 7 \\ 2x - 6y = 12 \\ -2x + 8y = -14 \end{array}$$

$$2y = -2$$

$$y = -1$$

$$x - 4(-1) = 7$$

$$x + 4 = 7$$

$$x = 3$$

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

Consistent

Independent

$$14) \begin{cases} 3x - y = -8 \\ 5x + 2y = 5 \end{cases} \quad \text{Add}$$
$$\begin{array}{r} 3x - y = -8 \\ 5x + 2y = 5 \\ 6x - 2y = -16 \end{array}$$

$$11x = -11$$

$$x = -1$$

$$5(-1) + 2y = 5$$

$$-5 + 2y = 5$$

$$2y = 10$$

$$y = 5$$

$$(x, y) = (-1, 5)$$

Consistent

Independent

$$15) \begin{cases} 4x + 2y = -1 \\ -2(2x + y = 1) \end{cases}$$

$$\begin{array}{r} 4x + 2y = -1 \\ -4x - 2y = -2 \end{array} \quad] \text{ Add}$$

$$0 = -3 \quad \text{False}$$

$$(x, y) = \{ \emptyset \}$$

Inconsistent

$$16) \begin{array}{r} -2(x - 2y = 3) \\ 2x - 4y = 6 \\ -2x + 4y = -6 \end{array} \quad] \text{ Add}$$

$$0 = 0 \quad \text{True}$$

$$(x, y) = \{ x - 2y = 3 \}$$

Consistent Dependent