

$$4x - 3y = 6$$

$$\begin{matrix} x & y \\ (5, 7) \end{matrix}$$

$$(3, 2)$$

$$\begin{matrix} x & y \\ (0.5, -1.3) \end{matrix}$$

$$4(5) - 3(7) = 6$$

$$20 - 21 = 6$$

$$-1 = 6$$

no

$$4(3) - 3(2) = 6$$

$$12 - 6 = 6$$

$$6 = 6$$

$$4(0.5) - 3(-1.3) \stackrel{\text{yes}}{=} 6$$

$$2 - (-3.9) = 6$$

$$5.9 = 6$$

no



$$x + 2y = 57$$

$$\begin{matrix} (5, 0) \\ x \quad y \end{matrix}$$

$$5 + 2(0) = 57$$

$$5 = 57$$

$$3(-5x + \frac{y}{3}) = 9(3)$$

$$\cancel{15x} + y = 27 + \cancel{15x}$$

$$- \cancel{15x}$$

$$y = 15x + 27$$

$$\frac{-4x + 0.5y}{-0.5} = \frac{-2}{-0.5}$$

$$\begin{array}{r} 8x + y = 4 \\ -8x \phantom{+ y} \\ \hline y = -8x + 4 \end{array}$$

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

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

$$4 \cdot \frac{1}{4}x = \frac{1}{4}y \cdot 4$$

$$x = y$$

x	y
-1	-10
0	-9
1	-8
2	-7

(-1, -10)  
(0, -9)  
(1, -8)  
(2, -7)

$$\begin{aligned}
 x - y &= 9 \\
 \cancel{x} - 1 - y &= 9 + 1 \\
 -y &= 10 \\
 \frac{-y}{-1} &= \frac{10}{-1} \\
 y &= -10
 \end{aligned}$$

$$\begin{aligned}
 0 - y &= 9 \\
 -y &= 9 \\
 \frac{-y}{-1} &= \frac{9}{-1} \\
 y &= -9
 \end{aligned}$$

$$\begin{aligned}
 \cancel{x} - 1 - y &= 9 - 1 \\
 -y &= 8 \\
 \frac{-y}{-1} &= \frac{8}{-1} \\
 y &= -8
 \end{aligned}$$

$$\begin{aligned}
 \cancel{x} - 2 - y &= 9 - 2 \\
 -y &= 7 \\
 \frac{-y}{-1} &= \frac{7}{-1} \\
 y &= -7
 \end{aligned}$$

$$3x - 2y = 12$$

$$\begin{matrix} (0, 4) \\ x \quad y \end{matrix}$$

$$3(0) - 2(4) = 12$$

no

$$(-8 = 12)$$

$$-8 = 12$$



$$-\frac{1}{2}x + 5y = 47$$

$$x = -14$$

$$-\frac{1}{2}(-14) + 5y = 47$$

$$-0.5(-14) + 5y = 47$$

$$~~-7~~ + 5y = 47$$

$$~~5y = 47~~$$

$$y = \frac{47}{5}$$

$$\begin{array}{r} 5y+3 = 2y-3x+5 \\ -2y \qquad -2y \\ \hline \end{array}$$

$$\begin{array}{r} 3y+3 = -3x+5 \\ -3 \qquad -3 \\ \hline \end{array}$$

$$\begin{array}{r} 3y = -3x+2 \\ 3 \qquad 3 \\ \hline y = -x + \frac{2}{3} \end{array}$$

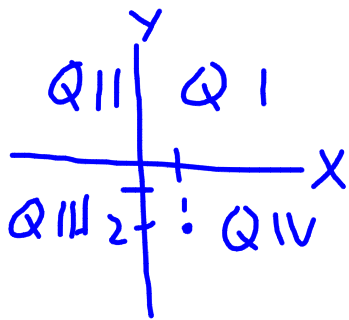


$$3x - 4y = 12$$

Is it a solution?

$$(1, -2)$$

$$(2, -1.5)$$



$$3(2) - 4(-1.5) = 12$$

$$6 - -6 = 12$$

$$6 + 6 = 12$$

$$12 = 12$$

Yes

$$3(\underline{1}) - 4(\underline{-2}) = 12$$

$$3 - -8 = 12$$

$$3 + 8 = 12$$

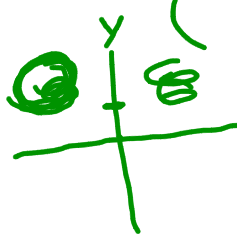
no

$$11 \neq 12$$

$$2x + 4y = 8$$

Find 3 solutions

x	y
(-1)	(2.5)
(0)	(2)
(1)	(1.5)



$$\begin{aligned} 2(-1) + 4y &= 8 \\ -2 + 4y &= 8 \\ \hline 4y &= 10 \\ y &= 2.5 \end{aligned}$$

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

solve for y in terms of x

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

$$\frac{2y}{2} = \frac{-3x + 3}{2}$$

$$y = -\frac{3}{2}x + \frac{3}{2}$$

$$y = -1.5x + 1.5$$

(-1  
10  
11

## Linear Equation

graph will be a line

$$Ax + By = C \text{ (standard form)}$$

### X-intercept

where graph crosses x-axis  
to find x-intercept you put 0 in for y

### Y-intercept

where graph crosses y-axis  
to find y-intercept you put 0 in for x

$$Ax + By = C$$

$$y = \cancel{3x} - 2$$

$-3x$

$$\boxed{-3x + y = -2}$$

$$\cancel{y - 3x} = \cancel{2}$$

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class Exercises



$$4x - 3y = 12$$

$$x\text{-intercept} = (3, 0)$$

$$4x - 3(0) = 12$$

$$\frac{4x}{4} = \frac{12}{4}$$

$$x = 3$$

$$y\text{-intercept} = (0, -4)$$

$$4(0) - 3y = 12$$

$$\frac{-3y}{-3} = \frac{12}{-3}$$

$$y = -4$$

$$-\frac{3}{2} = -1.5$$

