

Ex 1
Graph the following:

$$y = 2x$$

Solution

Step 1:- Create a table with x y as follows:

x	y

Step 2: Choose 3 different numbers

(I highly recommend you to select negative #, zero, and positive #).

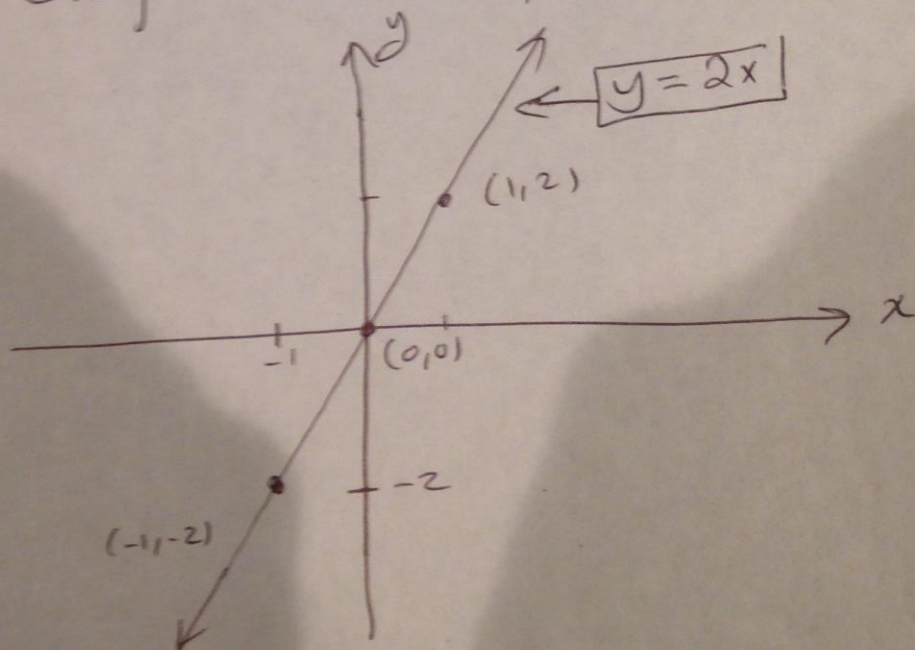
x	y
-1	
0	
1	

Step 3: Use the numbers in Step 2 to plug them in $y = 2x$.

x	y
-1	$-1(2) = \boxed{-2}$
0	$0(2) = \boxed{0}$
1	$1(2) = \boxed{2}$

Point
$(-1, -2)$
$(0, 0)$
$(1, 2)$

Step 4: Graph the above points as follows:

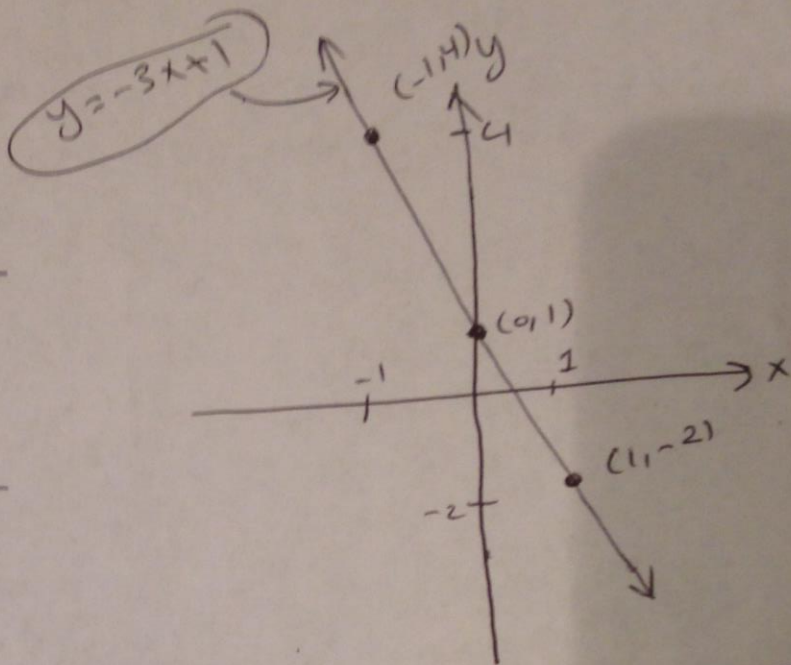


* Ex2) Graph the following:

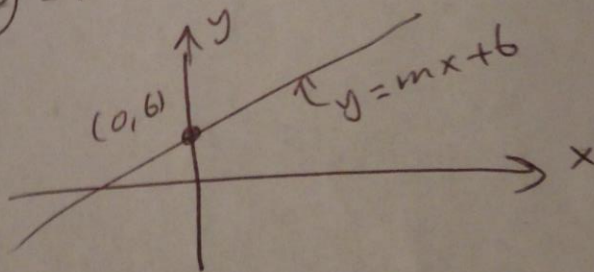
$$y = -3x + 1$$

Solution:

x	y	(x, y)
-1	$-3(-1) + 1$ $= 4$	(-1, 4)
0	$-3(0) + 1$ $= 1$	(0, 1)
1	$-3(1) + 1$ $= -2$	(1, -2)



* y-intercept: is defined as a point on the y-axis that is considered the passing point for the graph of equation $y = mx + b$. So, the y-intercept here is (0, b)



* Ex 3 | Graph the following :-

$$3x + 5y = 0 \text{ and find } y\text{-intercept.}$$

Solution:

$$3x + 5y = 0$$

$$\Rightarrow 3x = -5y$$

$$\Rightarrow \frac{3x}{3} = \frac{-5y}{3}$$

$$\Rightarrow \boxed{x = \frac{-5y}{3}}$$

Choose $y = 0$, then $3(0) + 5y = 0$

$$5y = 0$$

$$\boxed{y = 0}$$

So, $(0, 0)$

Now, $y = mx + b$

$$y = \frac{-5}{3}x + \boxed{b}$$

Plug $(0, 0)$ in the above, we obtain:

$$0 = \frac{-5}{3}(0) + b \Rightarrow 0 = 0 + b \Rightarrow \text{So, } b = 0$$

So, the y -intercept is $(0, 0)$. 4

* Intercepts :-y - intercept

$$(0, b)$$

Assume $x=0$
Solve for y

x - intercept

$$(a, 0)$$

Assume $y=0$
Solve for x

Ex 4 Find the y-intercept and x-intercept for the following:

$$4x + 3y = 12$$

Solution: $4x + 3y = 12$

$$\Rightarrow 3y = 12 - 4x$$

$$\Rightarrow y = \frac{12 - 4x}{3}$$

Plug $x=0$, we obtain $\Rightarrow y \Big|_{x=0} = \frac{12 - 4(0)}{3} = \frac{12}{3} = \boxed{4}$

So, $(0, 4)$ ← the y-intercept.

Now, let's find x-intercept as follows:

$$\Rightarrow 4x + 3y = 12$$

$$\Rightarrow 4x = 12 - 3y$$

$$\Rightarrow x = \frac{12 - 3y}{4}$$

Plug $y=0$, we obtain: $x \Big|_{y=0} = \frac{12 - 3(0)}{4} = \frac{12}{4} = \boxed{3}$

$\Rightarrow (3, 0) \leftarrow$ The x-intercept.

* Vertical line - Vs - Horizontal line

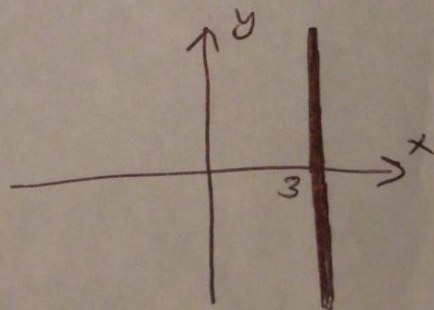
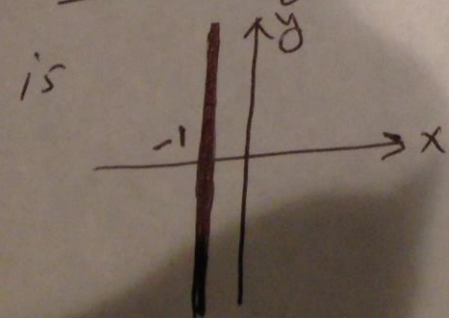
$$x = a$$

with x-intercept
(a, 0)

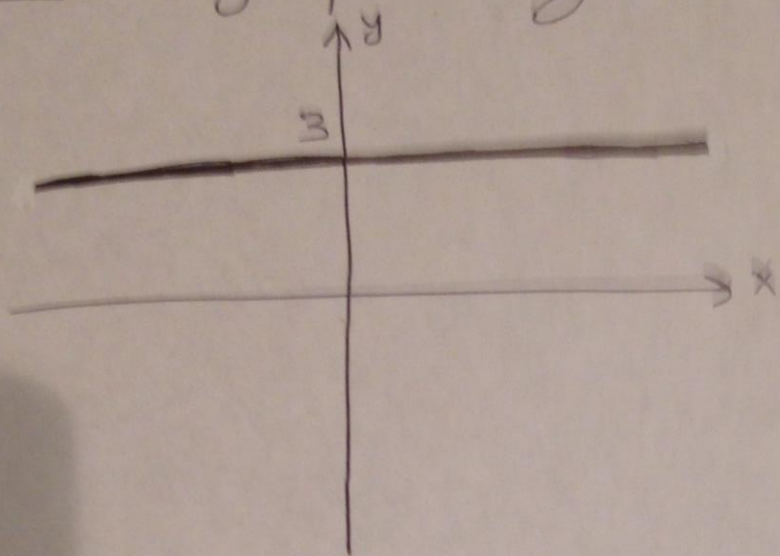
$y = b$
with y-intercept
(0, b)

* Ex 5] The graph for $x = 3$ is

* Ex 6] The graph for $x = -1$



Ex 7] The graph for $y = 3$ is



Ex 8] The graph for $y = -2$ is

