

1.1 Coordinate Systems and Graphs

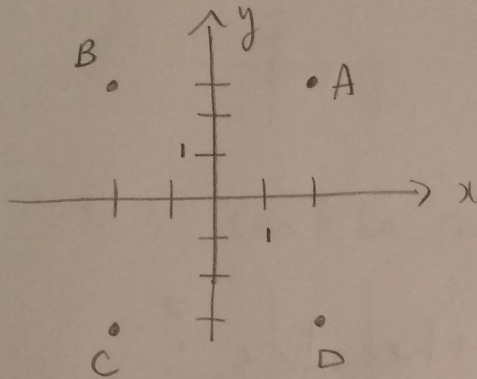
Ex: plot the points

$$A = (2, 3)$$

$$B = (-2, 3)$$

$$C = (-2, -3)$$

$$D = (2, -3)$$



Ex: Consider the line $21x + 7y = 14$

a) Put into standard form $y = mx + b$

$$7y = -21x + 14$$

$$y = -3x + 2$$

b) Slope?

$$m = -3$$

c) y-intercept?

$$b = 2$$

d) x-intercept?

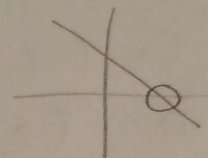
Set $y = 0$ and solve for x

$$y = -3x + 2$$

$$0 = -3x + 2$$

$$-2 = -3x$$

$$\frac{2}{3} = x$$



e) is $(1, -1)$ on the line?

Sub $x=1$
 $y=-1$

Is $y = -3x + 2$ true?

Yes

f) is $(2, 1)$ on the line?

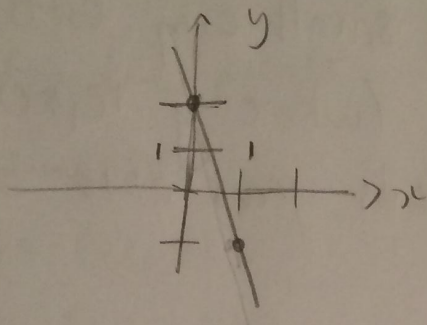
Sub $x=2$
 $y=1$

Is $y = -3x + 2$ true?

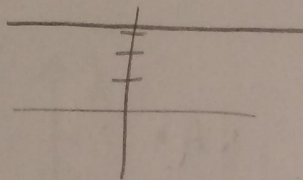
No

False

g) Plot the line

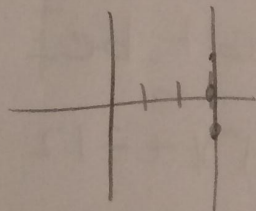


Ex: $y=3$ has $m=0$ $b=3$



HORIZONTAL

Ex: $x=3$ can't be put in the form $y=mx+b$



VERTICAL

x	y
3	-1
3	0
3	1

Ex: Annual car insurance for a 2010 Honda Civic in a small city costs
 $y = 65x + 712$ (where y represents dollars and x represents years after 2010).

a) cost in 2015?

$$x = 2015 - 2010 = 5$$

$$\rightarrow y = 65x + 712$$

$$y = 65(5) + 712$$

$$= \$1037$$

b) in which year will cost be \$1167?

$$y = 1167 \rightarrow y = 65x + 712$$

$$1167 = 65x + 712$$

$$455 = 65x$$

$$7 = x \leftarrow \text{years after 2010}$$

2017

c) interpret the y-intercept
(y-value when $x=0$)

The cost in 2010 is \$712