Slope - Intercept Form

Linear Equations come in 2 flavours:

① Slope - intercept
② General form

$y = mx + b$
(m: slope, b: y-int)

$y = -\frac{2}{3}x + 7$

Slope is $-\frac{2}{3}$ y-int is $(0,7)$

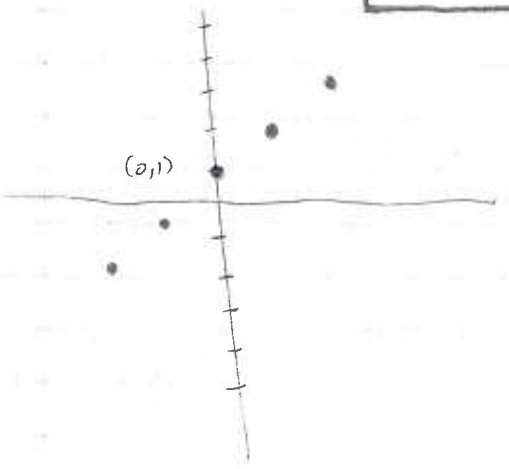
Write the equation of a line through $(0,2)$ with a slope of $\frac{1}{3}$

$y = \frac{1}{3}x - 2$

equations with $x^2, x^3, 2^x, \frac{1}{x}$...
do NOT form lines - they are non-linear

You graph a slope Intercept by thinking...

$y = \frac{2}{3}x + 1$
start at $(0,1)$
directions: go up 2 over 3
in a "positive slope direction



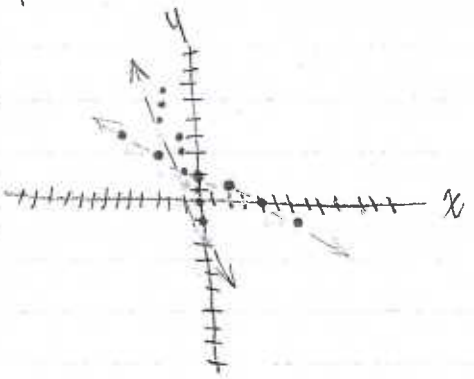
Try These: $y = -1x - 7$ $m = -1$

y-int = $0, -7$

$y = 3x - 2$ and $y = -\frac{1}{2}x + 1$
(3 points minimum for each.)

$m = \frac{3}{1}$ so start at $(0, 2)$ and go up 3 right 1, etc

m is neg so start at (0,1) go up 1, left 2

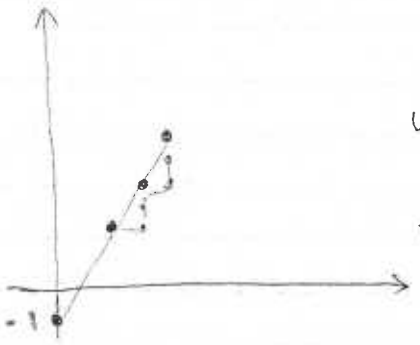


Slope-Intercept form - day 2.

11/21/19

- Writing equations in the form: $y = mx + b$
- Given a graph we can write in slope-intercept form by locating "b" and counting "m"

ex.



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

$m = \frac{2}{1} = 2$

ex. Write the equation for each line in slope intercept form:

a) Line ① passes through point $(0,3)$ and a slope $= \frac{5}{2}$
(0 = b, $\frac{5}{2}$ = m)

$y = \frac{5}{2}x + 3$

b) A line parallel to $y = \frac{1}{3}x + 4$ and the same y-intercept as $y = 5x - 2$
(same slope; $\frac{1}{3}$ = m, -2 = b)

$y = \frac{1}{3}x - 2$

c) A line passing through $(0,9)$ and perpendicular to the line joining $(2,-6)$ and $(-5,0)$.
(b = 9; "opp" slope)

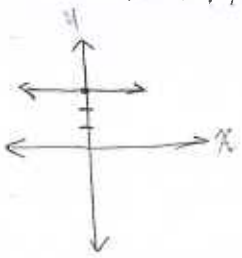
$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0-(-6)}{-5-2} = \frac{6}{-7}$ (x_1, y_1; x_2, y_2)

$m = \frac{7}{6}$

$y = \frac{7}{6}x + 9$

* Special Cases *

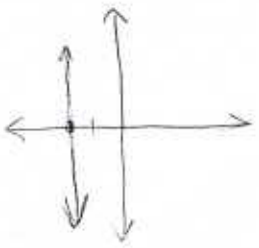
① Horizontal Lines → Slope = 0



$m = 0$
$b = 3$

$y = 0x + 3$
$y = 3$

② Vertical Line → undefined!



There's NO m or b values, can't use $mx+b$ form

$x = -2$