

5.4 Slope-intercept form

Linear Equations can come in many forms.
This is the first form of a linear equation that we will learn.

Slope-intercept form $y = mx + b$

m = Slope

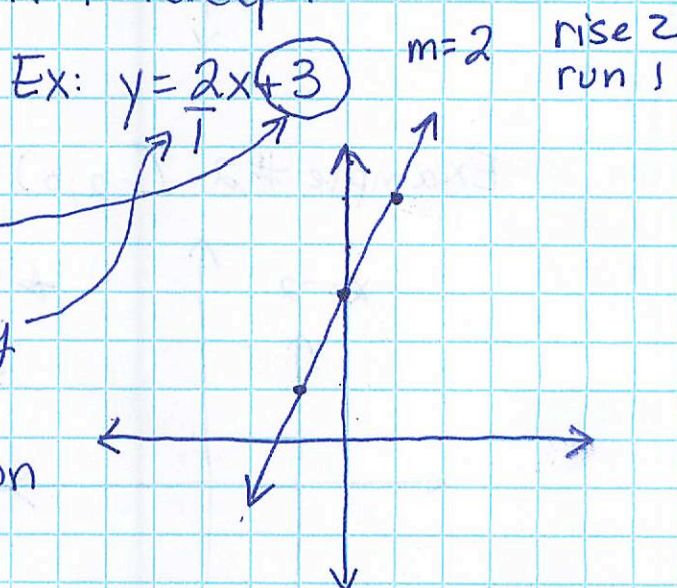
b = y -intercept \rightarrow the y -value of the point at which the line crosses the y -axis. How else could we think of this? What would the value of x be at the y -intercept? What about x -intercept?

Recall: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Recall: The point $(0,0)$ is called the origin

How do you graph a line in $y = mx + b$ form?

- Step 1: Plot y -intercept
- Step 2: Change slope to fraction, if necessary
- Step 3: From y -intercept rise and run based on the Slope fraction
- Step 4: Repeat for 3 pts.



How do you find the equation from 2 points on the line?

- Step 1: Find Slope
- Step 2: Replace the m, x, y into $y = mx + b$ and solve for b .
- Step 3: Rewrite $y = mx + b$ with the new m & b

Ex: $(3,3)(5,7)$

$$m = \frac{7-3}{5-3} = \frac{4}{2} = 2$$

$$\begin{aligned} y &= mx + b \\ 3 &= 2(3) + b \\ 3 &= 6 + b \\ -3 &= b \end{aligned}$$

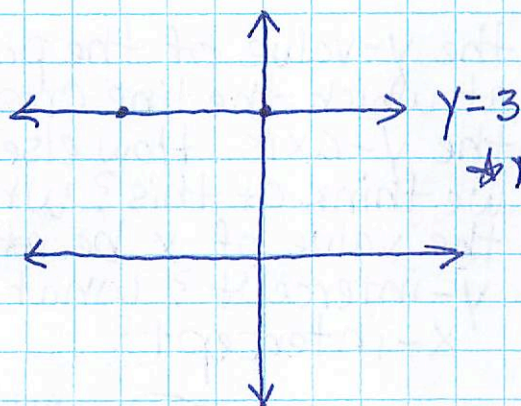
$$y = 2x - 3$$

Horizontal and Vertical Lines

Equation of horizontal line is $y=b$, where b is y -int.

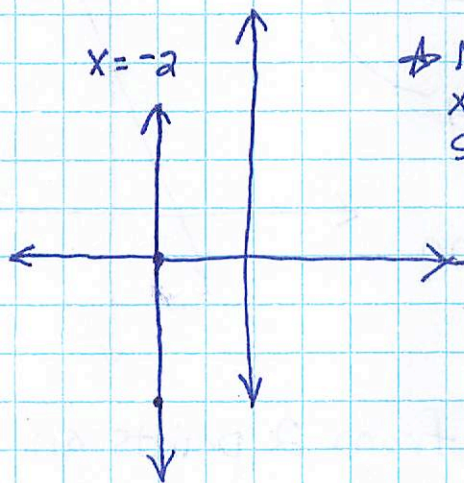
Equation of vertical line is $x=a$, where a is x -int.

Example: Write equation of line
#1 $(-3, 3)$ $(0, 3)$



★ Notice that
the y -values
of the coordinates
are the same.

Example #2 $(-2, 0)$ $(-2, -3)$



★ Notice that the
 x -values are the
same.

Geogebra: Sliders m & b
What happens to line
as you move Sliders?

HW

~~QW~~ Pg 249 (12, 17, 19, 23, 25, 32, 34, 38, 39, 47)