

BE-Algebra WEDNESDAY 10-13-10

- ① DEFINE SLOPE.
 - ② Identify THE LINEAR EQUATIONS:
 - A. $2x + 6y = 7$
 - B. $7x - 3y = 4x - y + 8$
 - C. $2x + 3x^2 = 6$
 - ③ Find THE slope of the line through $(-1, -2)$, $(-4, 6)$
 - ④ WHAT is THE slope of A horizontal line? A vertical line?
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- Did ANYONE TAKE THE "BEGINNER" TRACKS quiz?
- Take out homework $\Rightarrow$ Pg 259 #5-10.

Homework $\Rightarrow$ Pg. 259 # 5-10.

5. $(1, 1), (3, 4)$ $m = \frac{4-1}{3-1} = \boxed{\frac{3}{2} = m}$

6. $(0, 0), (5, 4)$
 $(x_1, y_1), (x_2, y_2)$ $m = \frac{4-0}{5-0} = \boxed{\frac{4}{5} = m}$

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

7. $(-2, 2), (-1, -2)$ $m = \frac{-2-2}{-1-(-2)} = \frac{-4}{1}$

$$\boxed{m = -4}$$

8. $(7, -4), (9, -1)$ $m = \frac{-1+4}{9-7} = \boxed{\frac{3}{2} = m}$

9. $(3, 5), (-2, 5)$ $m = \frac{0}{-2-3} = \boxed{0 = m}$
HORIZONTAL

10. $(-1, 3), (-1, 0)$ $m = \frac{0-3}{-1+1} = \frac{-3}{0} = \boxed{\text{UNDEFINED}}$
VERTICAL

Slope is one property of a line.

Another property is where the line crosses the X or Y axis.

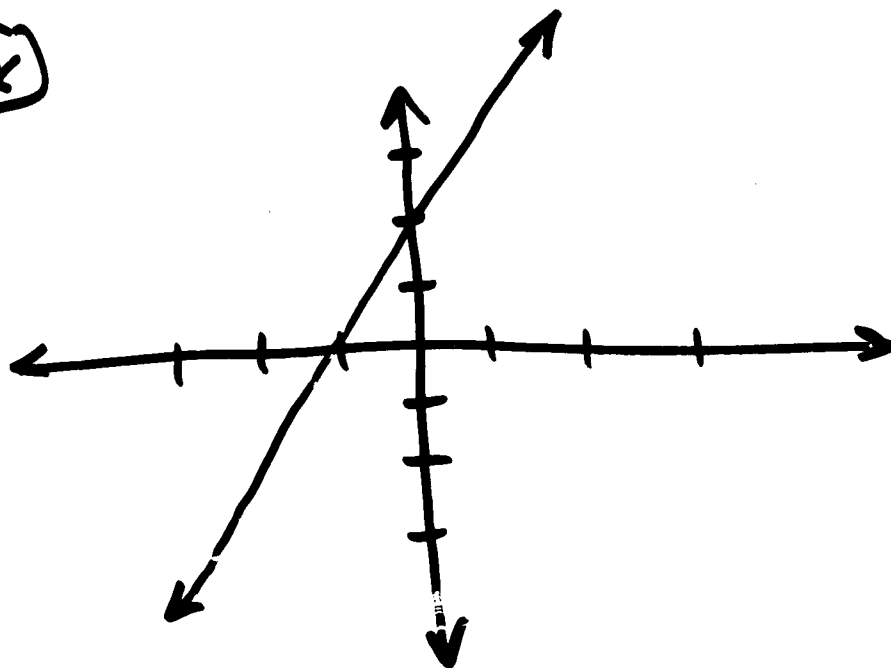
(*) The X coordinate of the point where a line crosses the X axis is called the X-intercept.
or X_{int} .

What is the Y-coordinate for any point on the X axis?

(*) The Y coordinate of the point where a line crosses the Y axis is called the Y-intercept or Y_{int} .

What is the X-coordinate for any point on the Y axis?

(Ex)



Line crosses X axis AT $(-1, 0)$

So $x = -1$ is the x_{int}

Line crosses Y axis AT $(0, 2)$

So $y = 2$ is the y_{int}

All y-intercepts HAVE THE form $(0, y_{int})$

All x-intercepts HAVE THE form $(x_{int}, 0)$

HORIZONTAL LINES ONLY HAVE A y_{int}
 VERTICAL LINES ONLY HAVE A x_{int}
 ANY EXCEPTIONS?

EARLIER, I SAID YOU COULD NOT ONLY TELL IF AN EQUATION WAS LINEAR JUST BY LOOKING AT IT, BUT THAT IF YOU KNEW WHAT TO LOOK FOR YOU COULD ALSO SEE THE LINES PROPERTIES.

NOW THAT YOU KNOW SOME OF THE PROPERTIES OF A LINE (SLOPE, INTERCEPTS) LETS SEE IF THAT IS TRUE.

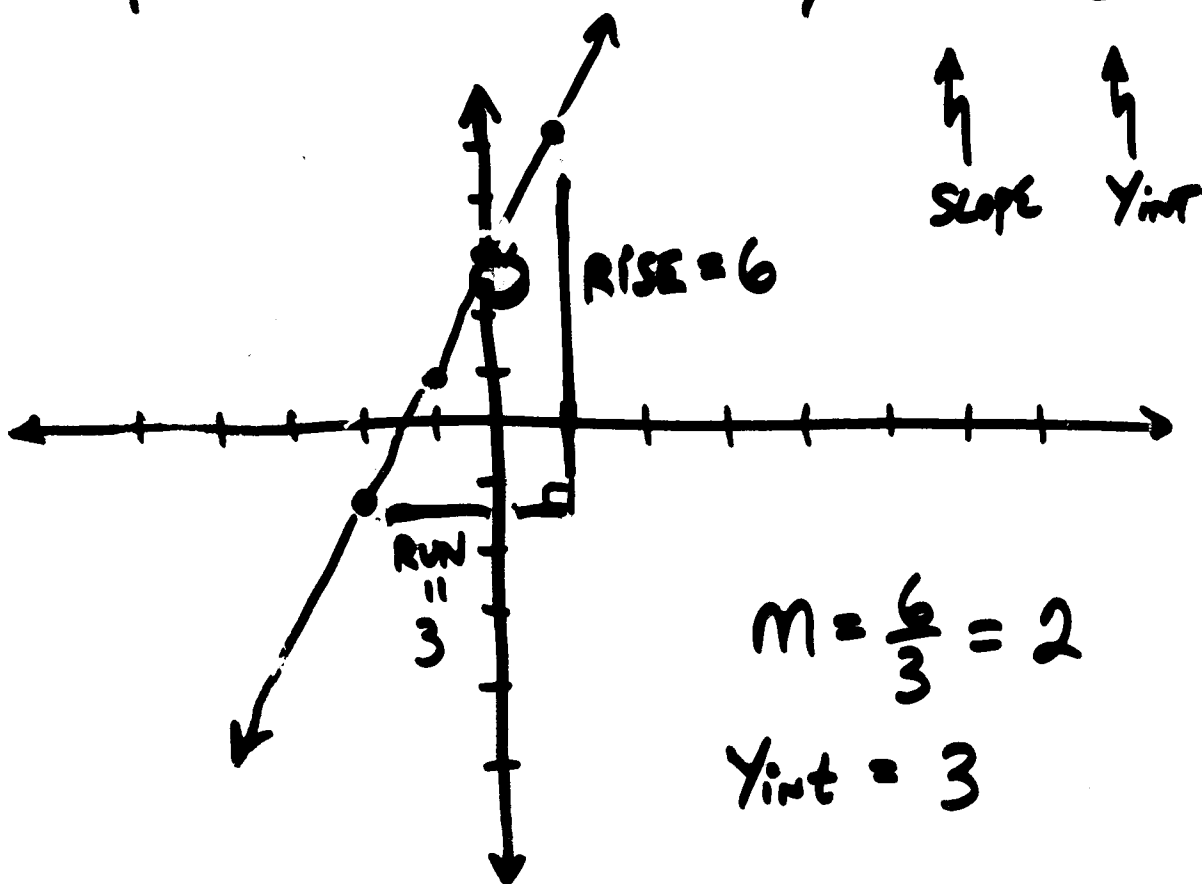
TAKE THIS EXAMPLE, IS IT A LINEAR EQUATION? IF SO, COMBINE LIKE TERMS AND SOLVE FOR y THEN GRAPH USING A T-TABLE.

$$5x - 7x + y - 1 = 2$$

$$-2x + y - 1 = 2$$

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

x	$y = 2x + 3$
-2	$2(-2) + 3 = -1$
-1	$2(-1) + 3 = 1$
0	$2(0) + 3 = 3$
1	$2(1) + 3 = 5$
2	$2(2) + 3 = 7$



NOTICE ANY RELATIONSHIP BETWEEN THE EQUATION AND ANY PROPERTIES OF THE LINE?

If you solve a LE for y
 $\uparrow \quad \uparrow$
 LINEAR EQUATION

the number in front of the x term
 is the SLOPE and the number is
 the y -intercept.

This form of LE is written

$$\boxed{y = mx + b}$$

It is called the "slope-intercept"
 form although a better name would
 be the "slope- y -intercept" form.

Lets take it out for a spin
 & use it for graphing.

GRAPH:

ⓔx $y = 3x - 2$

ⓔx $y = \frac{2}{5}x + 1$

ⓔx $y = -\frac{2}{3}x + 1$
Ex 3
Pg 273

ⓔx $5x - 3y = 6$
Ex 4
Pg 273

$$\frac{-3y}{-3} = \frac{-5x + 6}{-3}$$

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

*m $y = mx + b$
 { begin at b
 move by m

Homework: • Read 5-3 "Slope-Intercept Form"
 • Pg. 275 # 8-10