W-A1 Algebra 1 3/30

slope

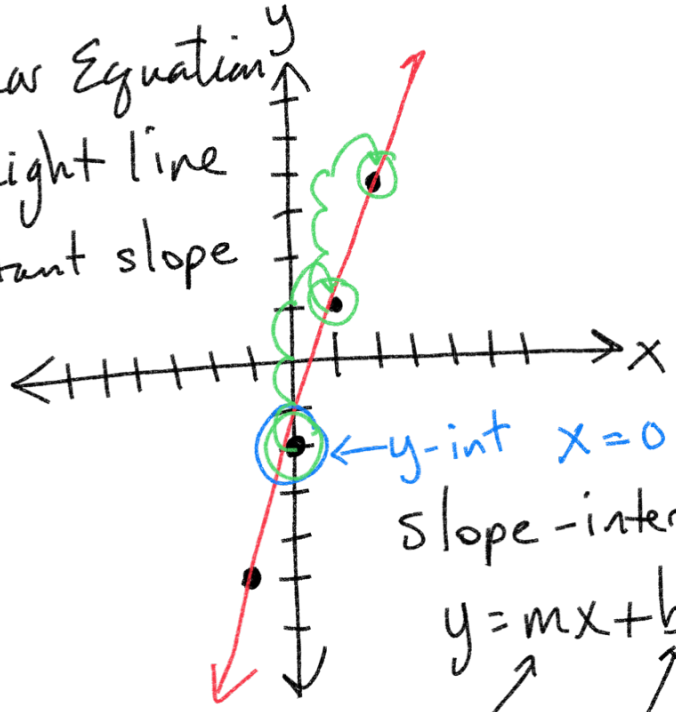
$y = 3x - 2$ ← y-int

input x	$3x-2$	output y	
-1	$3(-1)-2$ $-3-2$	-5	(-1,-5)
0	$3(0)-2$	-2	(0,-2)
1	$3(1)-2$ $3-2$	1	(1,1)
2	$3(2)-2$ $6-2$	4	(2,4)

Linear Equation

straight line

constant slope



slope-intercept

$y = mx + b$

slope y-int

$\text{slope} = 3 = \frac{3}{1} = \frac{\text{up } 3}{1 \text{ right}}$

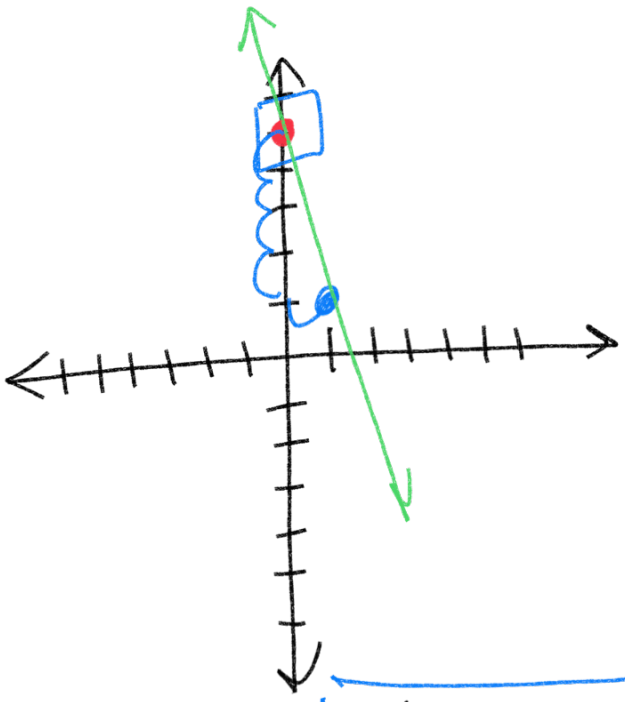
$y = -4x + 5$

$y = mx + b$

slope-intercept form

1.) Plot y-int

2.) Use slope to find the second point

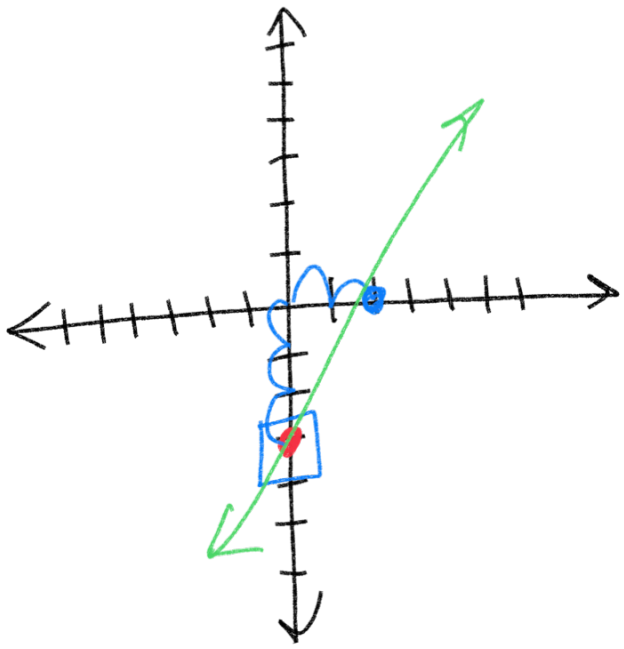


$\text{slope} = -4 = \frac{-4}{1} = \frac{\text{down } 4}{1 \text{ right}}$

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

1.) Plot y-int

2.) Use slope to find next point



slope = $\frac{\text{up } 3}{2 \text{ right}}$

Function Tables → Function Rules

input x	output y
-3	5
-1	7
4	12
x	$x+8$

(+8 from -3 to 5; +8 from -1 to 7; +8 from 4 to 12)

$y = x + 8$ $\quad f(x) = x + 8$ ← function with respect to x.

$x \rightarrow y$

increases: addition or multiplication

decreases: subtraction or division

①

x	y
-4	12
-1	3
5	-15

×(-3) → -3x

$f(x) = -3x$

②

x	y
-8	-11
-4	-7
3	0

-3 → x - 3

$f(x) = x - 3$

③

x	y
-24	8
-9	3
12	-4

÷(-3) → $\frac{x}{-3}$

$f(x) = \frac{x}{-3}$

Direct Variation

$y = kx$

k = constant of proportionality

C = cost

p = # of pizzas ordered

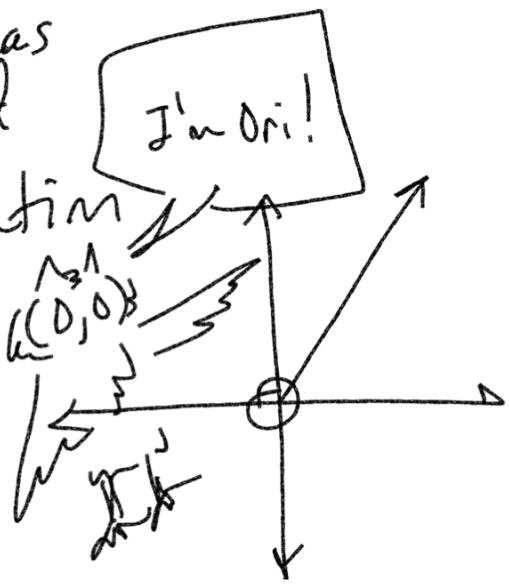
$C = \$8p$

Directly Proportional / Variation

1.) $y = kx$ ~~±~~

2.) linear (straight line)

3.) Go through the origin



1.) $y = 5x$ direct variation

2.) $-8x + 2y = 0$

$+8x \quad +8x$

$\frac{2y}{2} = \frac{8x}{2}$

$y = 4x$ direct variation

3.) $y = \frac{3}{4}x - 7$ not direct variation

4.) $y = 2x + 5$ not direct variation

$y = kx$

$\frac{y}{x} = \frac{kx}{x}$

$k = \frac{y}{x}$

x	y	$k = y/x$
4	8	$8/4 = 2$
7	14	$14/7 = 2$
10	20	$20/10 = 2$

direct variation

$y = kx$

$y = 2x$