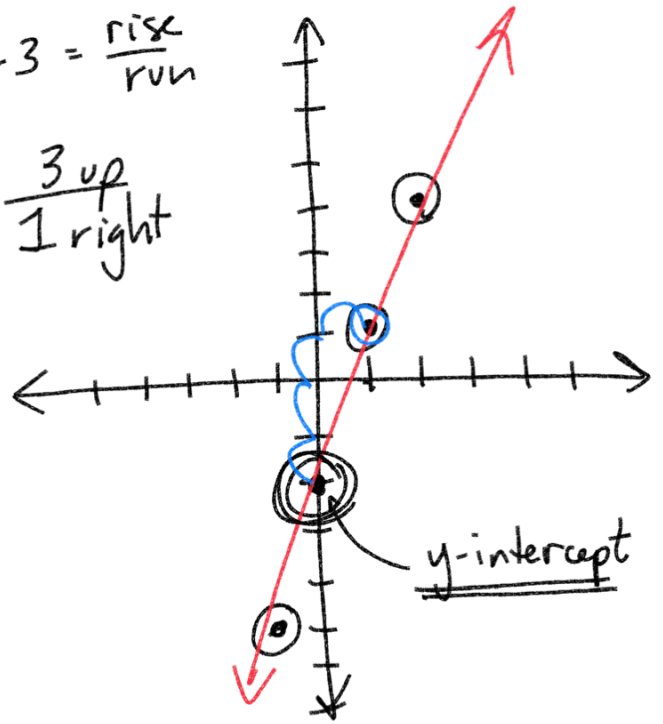


$y = 3x - 2$  ← y-intercept

slope = 3 =  $\frac{\text{rise}}{\text{run}}$

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

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

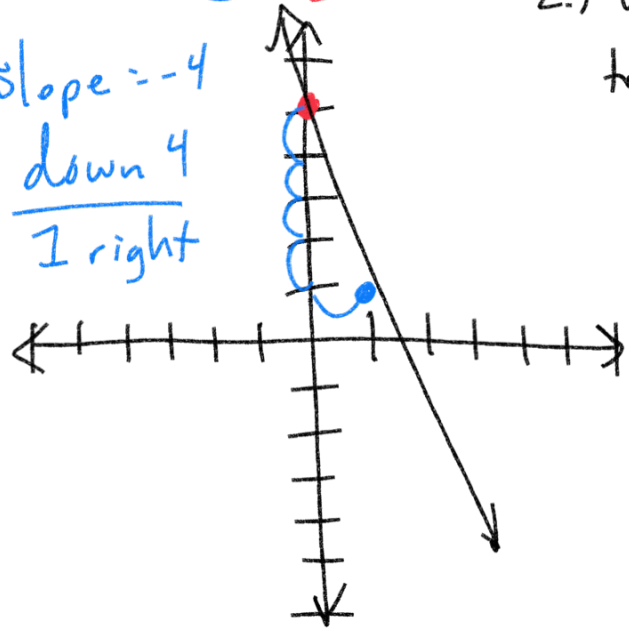


1.)  $y = -4x + 5$

1.) Plot y-int

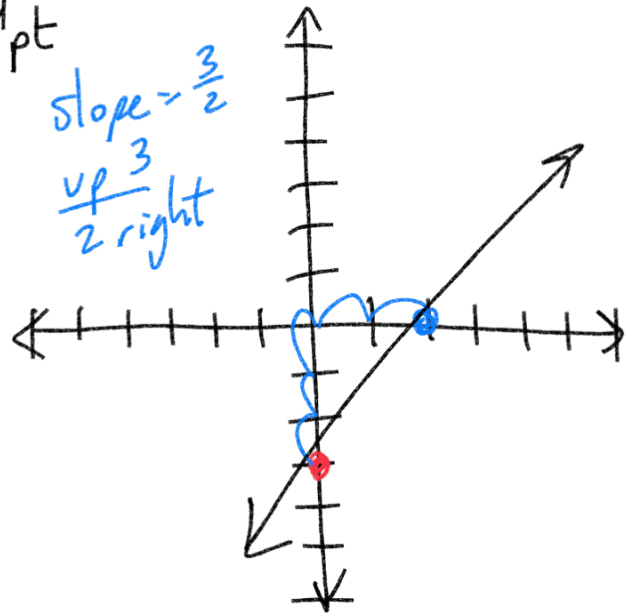
2.) Use slope to find 2<sup>nd</sup> pt

slope = -4  
down 4  
1 right

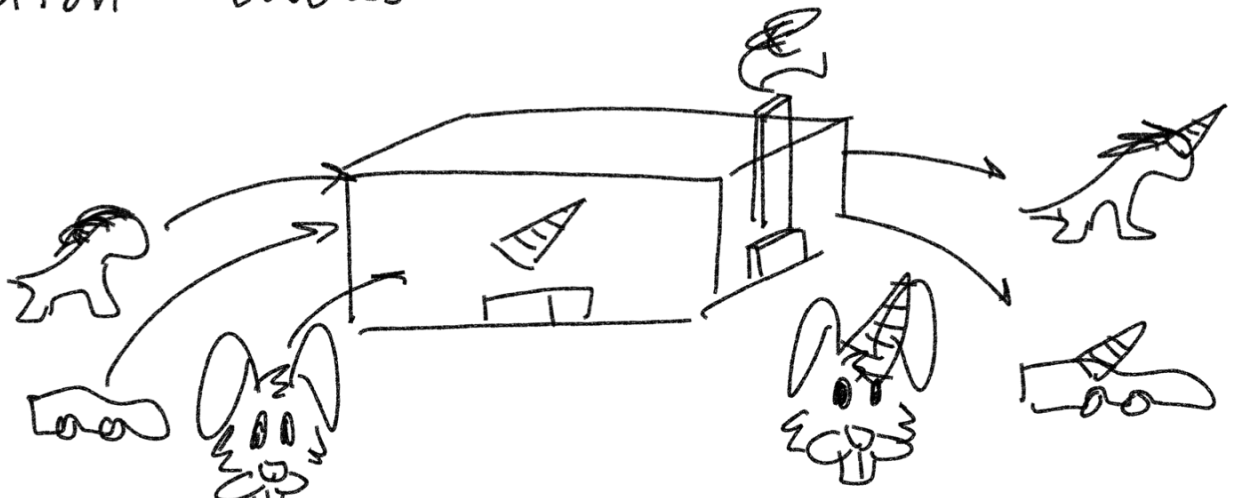


2.)  $y = \frac{3}{2}x - 3$

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



# Function Tables $\longrightarrow$ Function Rules



input		output
X		Y
-3	(+8)	5
-1	(+8)	7
4	(+8)	12

$X + 8 = Y$

X	Y
increases	decreases
(+) (x)	(-) (÷)

X	Y
-4	12
-1	3
5	-15

$$X * -3 = Y$$

$$-3X = Y$$

$$f(x) = -3X$$

“function with respect to x”

1.)

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

$$X - 3 = y$$

or

$$f(x) = X - 3$$

2.)

X	y
-24	8
-9	3
12	-4

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

$$X \div -3 = y$$

$$f(x) = X \div -3$$

### Direct Variation

$$y = kx$$

↑  
proportionality constant

proportional to

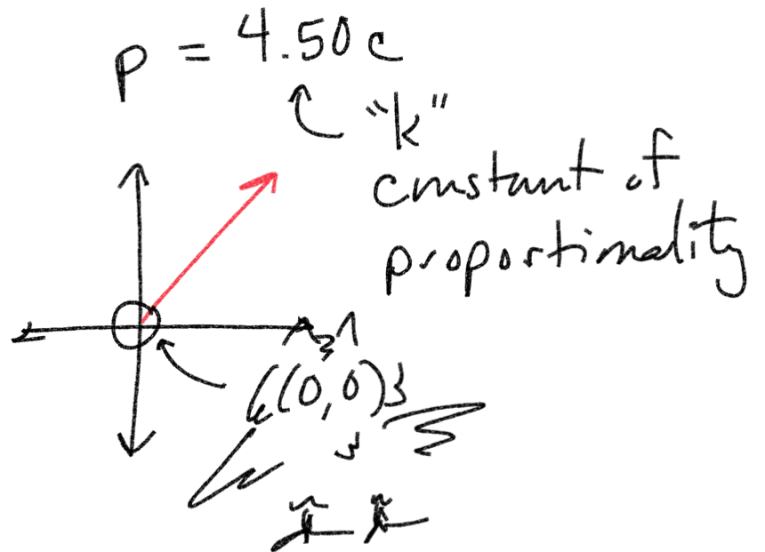
$$y \propto x$$

$p = \text{price}$   
 $c = \text{chicken sandwich}$

$$p \propto c$$

### Directly Proportional Direct Variation

- 1.)  $y = kx$
- 2.) linear (straight line)
- 3.) Goes through origin



Direct Variation:  $y = kx$

1.)  $y = 5x$   $k = 5$   
yes, direct variation

2.)  $-8x + 2y = 0$   
yes, direct variation  
 $k = 4$

$$\begin{array}{r} -8x + 2y = 0 \\ +8x \qquad \qquad +8x \\ \hline 2y = 8x \\ \frac{2y}{2} = \frac{8x}{2} \\ y = 4x \end{array}$$

3.)  $y = \frac{3}{4}x$  yes, direct variation  
 $k = \frac{3}{4}$

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

5.)  $y = \frac{2}{5}x - 1$  not direct variation

Direct Variation

X	y	$k = \frac{y}{x}$
→ 4	8	$\frac{8}{4} = 2$
→ 7	14	$\frac{14}{7} = 2$
→ 10	20	$\frac{20}{10} = 2$

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

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

$$k = 2$$

$$y = 2x$$

X	y	$k = \frac{y}{x}$
→ -3	-2	$\frac{-2}{-3} = \frac{2}{3}$
→ 3	2	$\frac{2}{3} = \frac{2}{3}$
→ 9	6	$\frac{6}{9} = \frac{2}{3}$

$$y = kx$$

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

$\frac{0}{0}$  this is OK