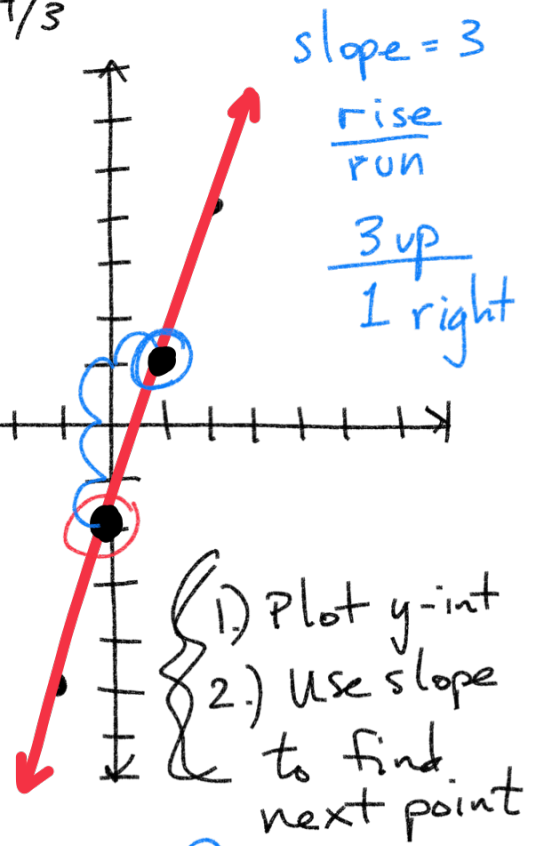


slope  $\rightarrow$   $y = 3x - 2$   $\leftarrow$  y-intercept

input  $x$       outputs  $y$

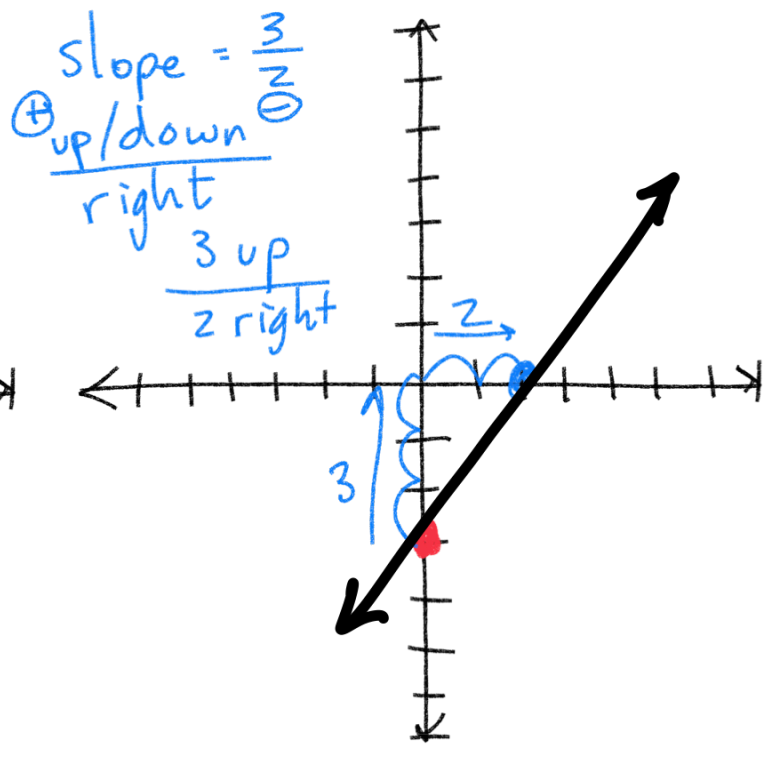
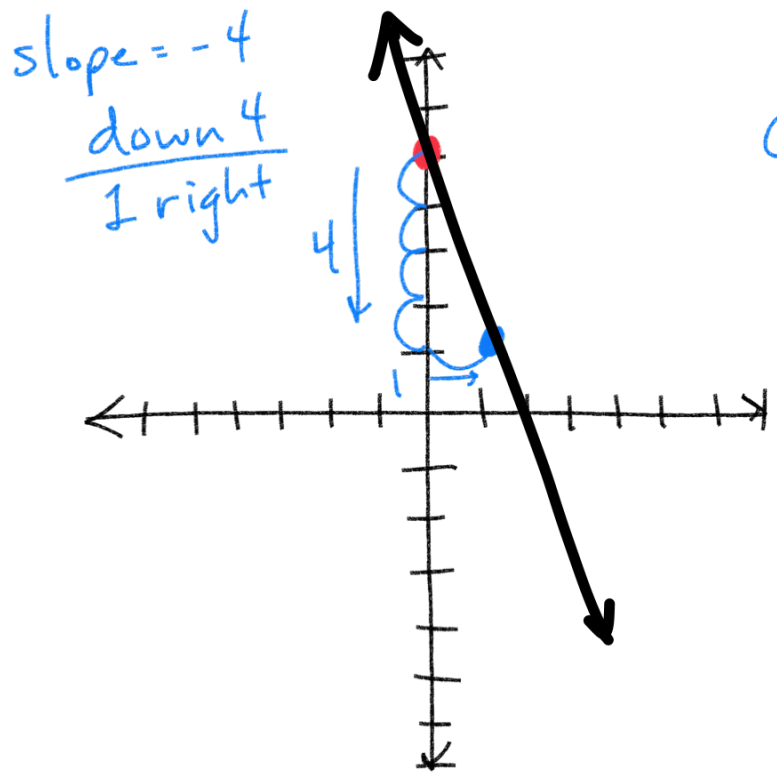
$x$	$3x - 2$	$y$
-1	$3(-1) - 2$ $-3 - 2$	-5    (-1, -5)
0	$3(0) - 2$	-2    (0, -2)
1	$3(1) - 2$ $3 - 2$	1    (1, 1)
2	$3(2) - 2$ $6 - 2$	4    (2, 4)



1.)  $y = -4x + 5$   $\leftarrow$  y-int

- 1.) Plot y-int
- 2.) Use slope

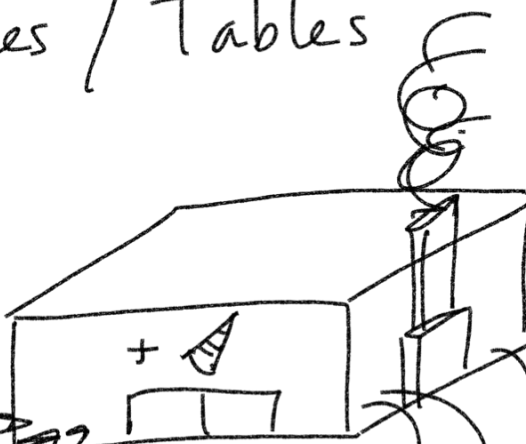
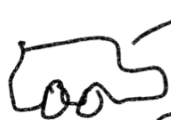
2.)  $y = \frac{3}{2}x - 3$   $\leftarrow$  down 3



# Function Rules / Tables

Inputs

Outputs



input  
X

output  
y

$$-3 + 8 = 5$$

$$-1 + 8 = 7$$

$$4 + 8 = 12$$

$$X + 8 = y$$

X increases  
y decreases

$\oplus \quad \otimes$        $\ominus \quad \div$

$$X + 8 = y$$

$$f(x) = x + 8$$

"f(x)" → function with respect to x

X	y
-4	12
-1	3
5	-15

$$-4 * -3 = 12$$

$$-1 * 3 = 3$$

$$5 * -3 = -15$$

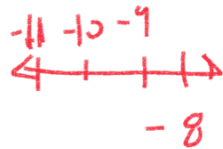
$$X * -3 = y$$

$$-3X = y$$

1.)

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

$X - 3 = y$



2.)

X	y
-24	8
-9	3
12	-4

$X \div -3 = y$

$\frac{X}{-3} = y$

## Direct Variation

$y = kx$

↳ constant of variation

↑ y ∝ x ↑

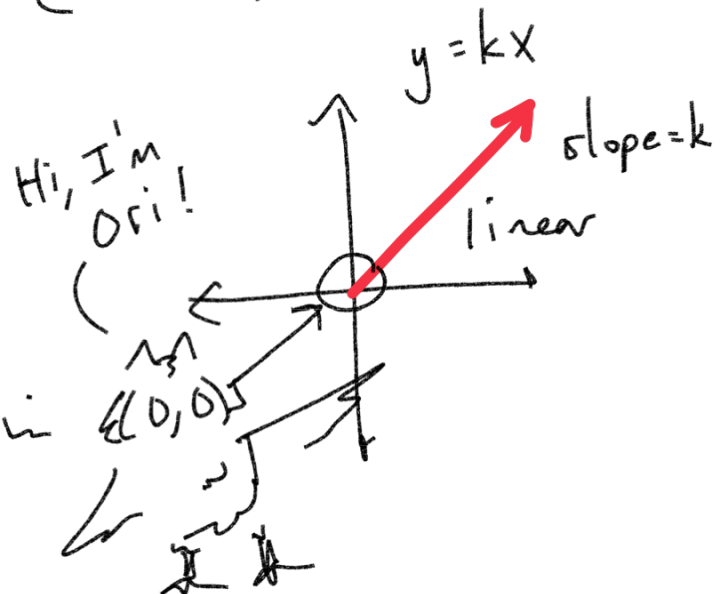
c ∝ d

↳ constant "k"

$c = \$1.73d$

## Direct Variation

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



Determine whether each is an example of Direct Variation.

$$y = kx$$

go through  $(0,0)$

1.)  $y = 5x$       $k = 5$

$y = kx$

yaw! Direct variation

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

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

$$y = 4x$$

yaw!  
 $k = 4$

3.)  $y = \frac{3}{4}x$      yaw!      $k = \frac{3}{4}$

4.)  $y = 2x + 5$       $(0,0)$   
Now!

$$y = 2x + 5$$

$$0 = 2(0) + 5$$

$$0 = 5 \text{ false!}$$

5.)  $y - 1 = \frac{2}{5}x - 1$   
 $+1$                        $+1$

$$y = \frac{2}{5}x$$
 yaw!  $k = \frac{2}{5}$

# Determining direct variation through tables

x	y
4	8
7	14
10	20

$k = \frac{y}{x}$   
 $\frac{8}{4} = 2 \checkmark$   
 $\frac{14}{7} = 2 \checkmark$   
 $\frac{20}{10} = 2 \checkmark$  *yaw!*

$[y = kx]$   
 $\frac{y}{x} = \frac{kx}{x}$   
 $k = \frac{y}{x}$

$k = 2$   $y = kx$   $y = 2x$

x	y
-3	-2
3	2
9	6

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

*yaw!*  $y = \frac{2}{3}x$