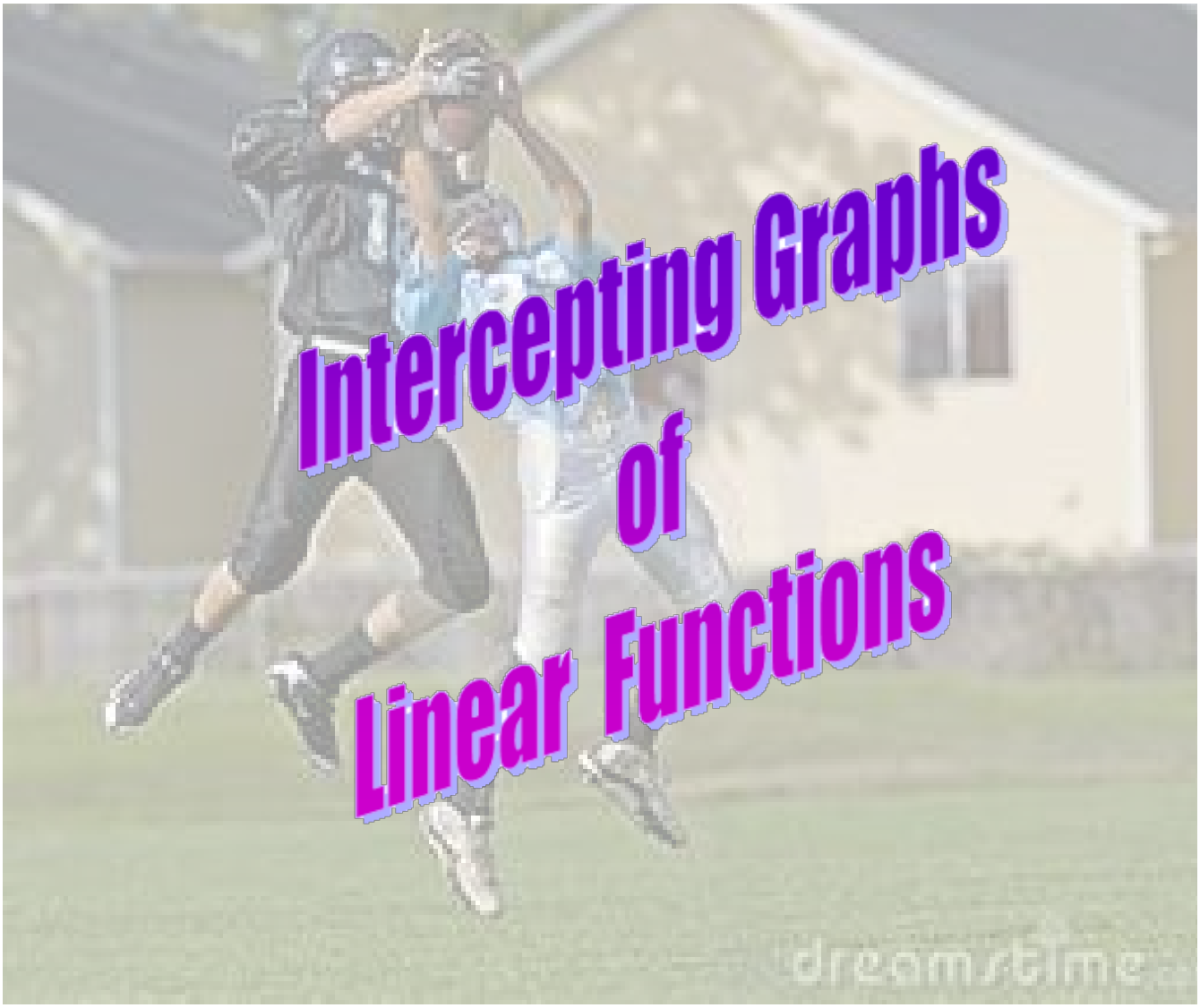

Intercepting Graphs
of
Linear Functions
dreamstime

Intercepts

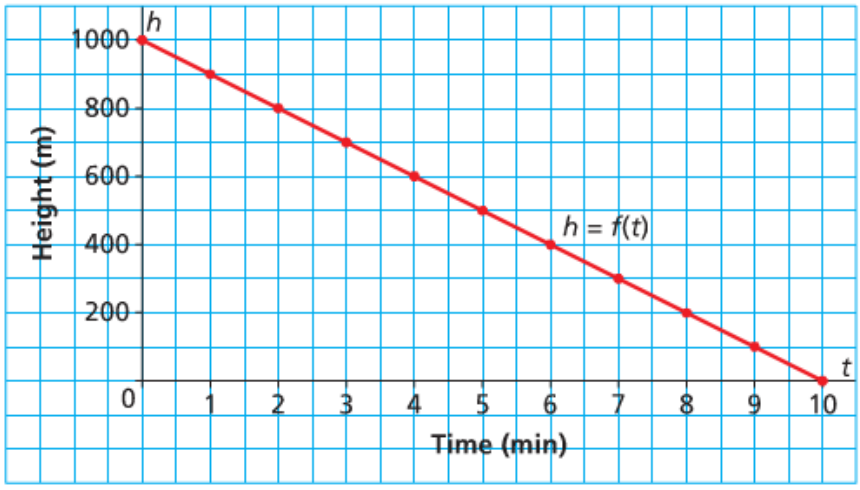
Horizontal intercept -

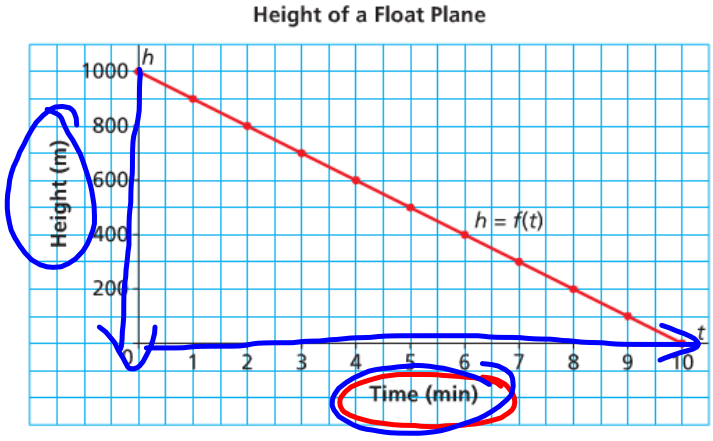
The point where the graph intersects (crosses) the horizontal axis (x-axis)

Vertical Intercept -

The point where the graph intersects (crosses) the vertical axis (y-axis)

Float planes fly into remote lakes in Canada's Northern wilderness areas for ecotourism. This graph shows the height of a float plane above a lake as the plane descends to land.





a) What is the vertical intercept? (y - intercept)
What does this represent?

1000 (0, 1000)

Represent the intial before descending.

b) What is the horizontal intercept? (x - intercept)
What does this represent?

10

(time) How long it took the plan to land.

c) What is the rate of change? What does this represent?

Slope = Rate of Change

(0, 1000) (10, 0)

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

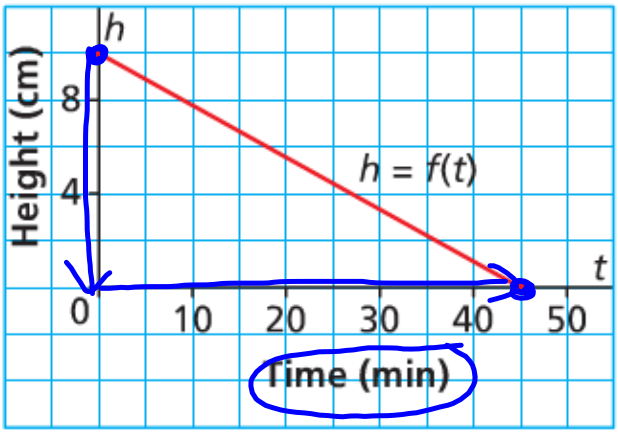
$m = \frac{\text{rise}}{\text{run}}$ $\frac{m}{min}$ or

$= \frac{-1000}{10}$

$m = -100\ m/min$

This graph shows how the height of a burning candle changes with time.

Height of a Burning Candle



a) What is the horizontal intercept? What does this represent?

45 Time it took for candle to burn.

b) What is the point of the horizontal intercept?

(x, y)

(45, 0)

c) What is the vertical intercept? What does this represent?

10 cm · The height of candle before he lit it

d) What is the point of the vertical intercept?

(0, 10)

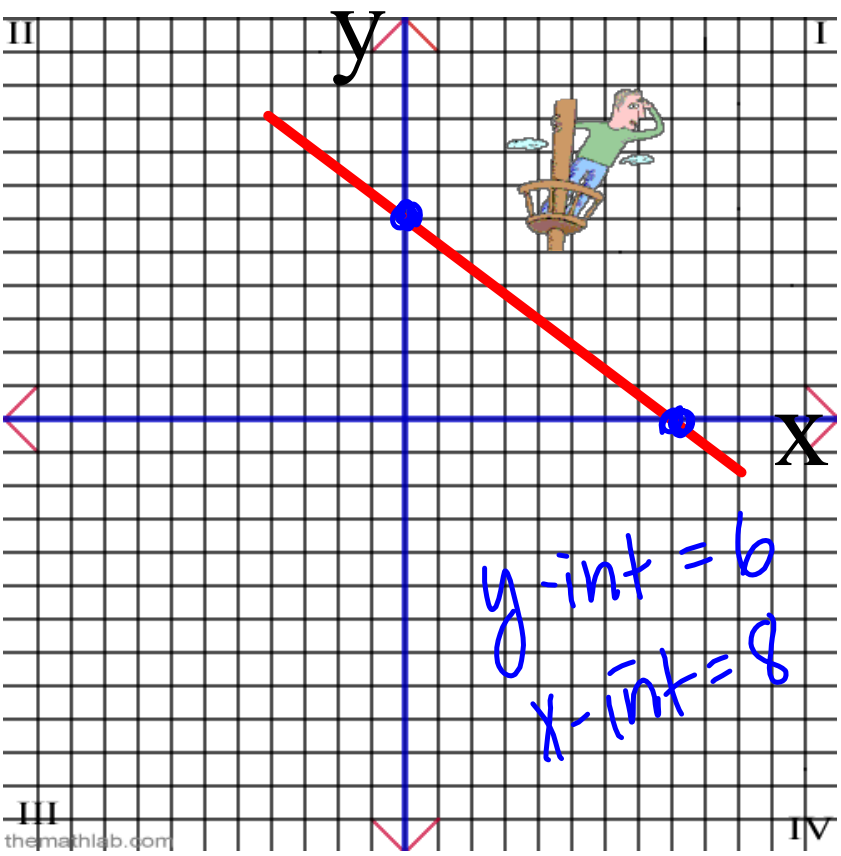
e) What is the rate of change?

$m = \frac{\text{rise}}{\text{run}}$

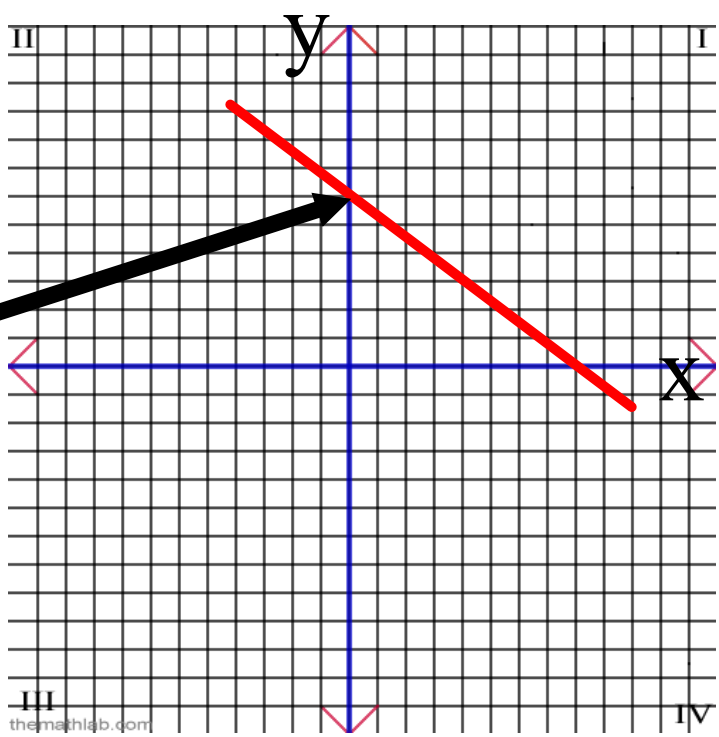
$\frac{-10}{45} \approx -0.22 \text{ cm/min}$

Intercepts

Can you see any intercepts?



Intercepts

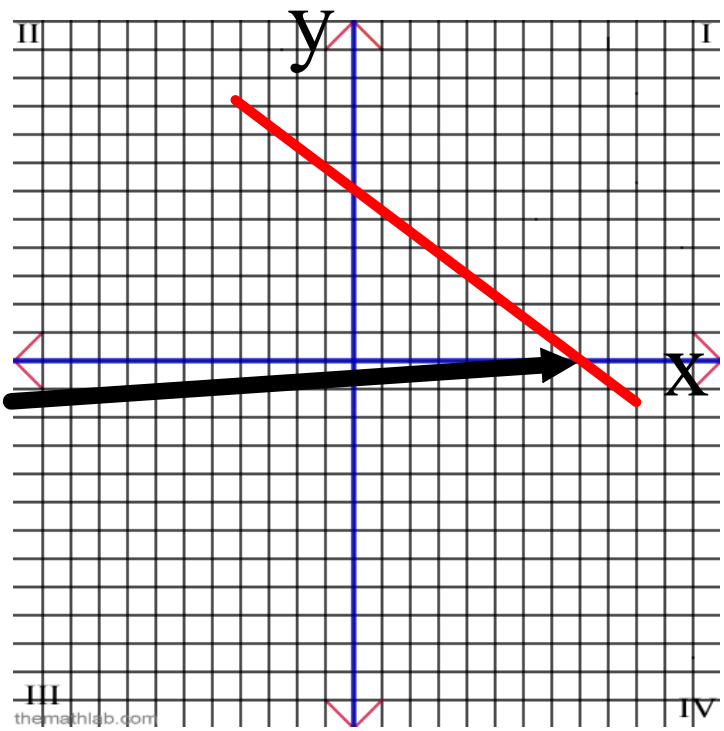


The "y-intercept" is the point on the line that crosses the"y" axis. (vertical axis)

y-intercept = 6

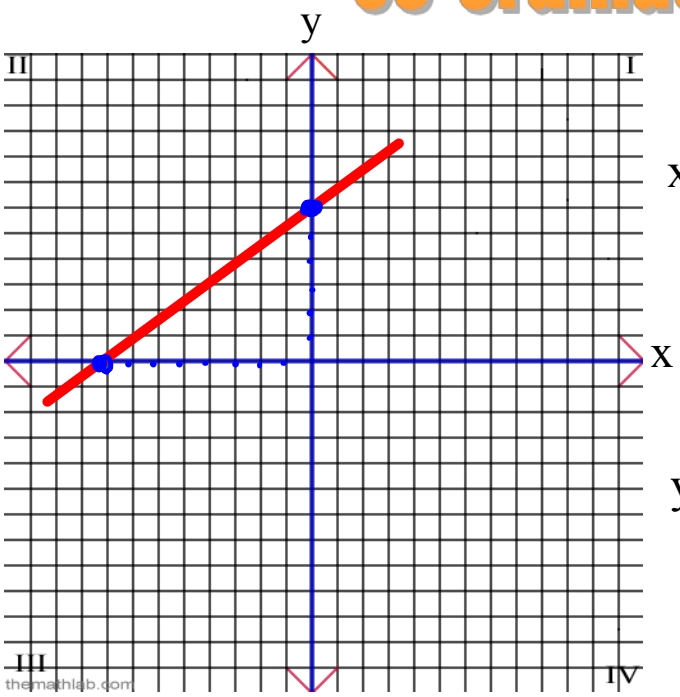
Intercepts

The "x-intercept" is the point on the line that crosses the "x" axis. (horizontal axis)



x-intercept = 9

How do you write the co-ordinates?



x-intercept = -8

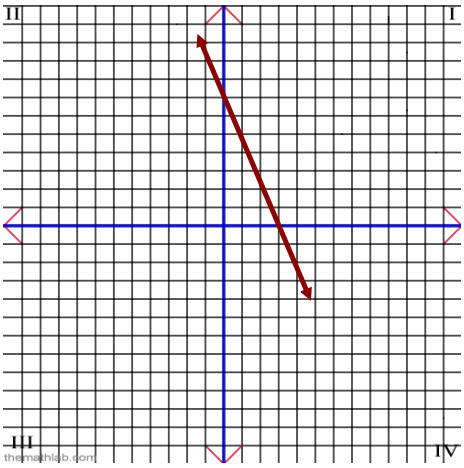
x , y

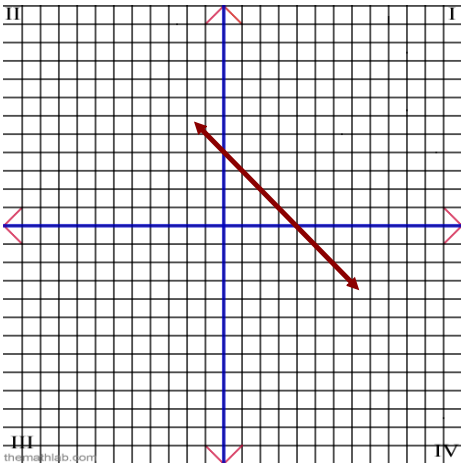
$(-8, 0)$

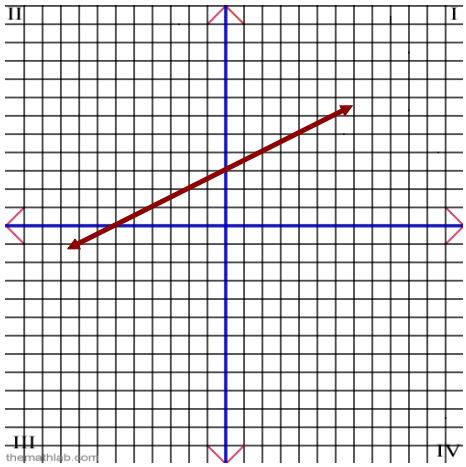
y-intercept = 6

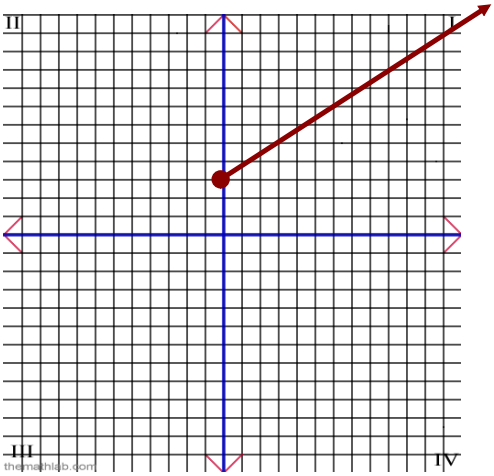
$(0, 6)$

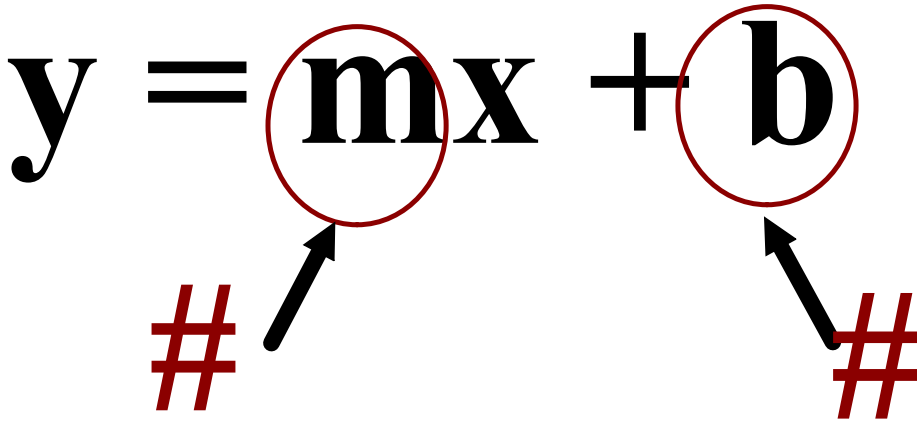
State the points of the x & y intercepts











m = Rate of Change (Slope)
b = initial amount (vertical intercept or y-int.)
x = represents the x-axis
y = represents the y-axis

Function Notation: $y(x) = mx + b$

Equation: $y = mx + b$

Can you see the difference

$y = 5x + 8$

$y = 5(3) + 8$

$y = 15 + 8$

$y = 23$

$y(x) = 5x + 8$

$y(3) = 5(3) + 8$

$y(3) = 15 + 8$

$y(3) = 23$

Let's Take a Closer Look!!

Let $x = 6$

$y = 5x + 2$

$y = 5(6) + 2$
$y = 30 + 2$
$y = 32$

$y(x) = 5x + 2$

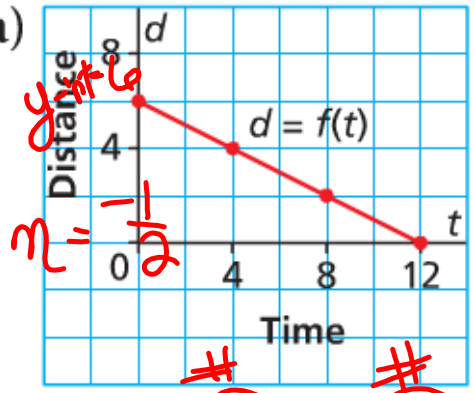
$y(6) = 5(6) + 2$
$y(6) = 30 + 2$
$y(6) = 32$

$$y = 32$$

$$y(4) = 32$$

Which graph has a rate of change of 1/2 and a vertical intercept of 6? Write the equation for each and the Function Notation.

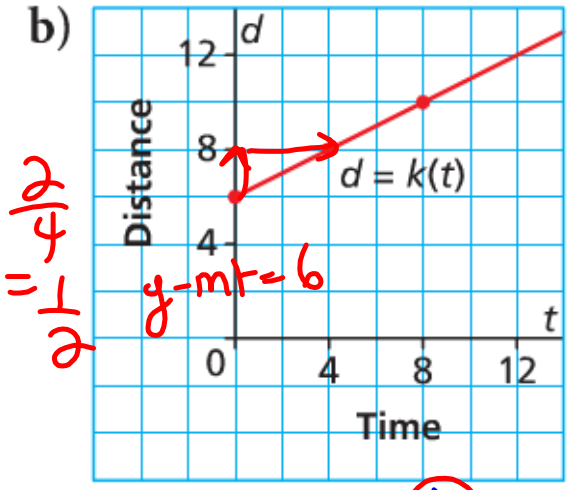
a)



$y = mx + b$

$y = \frac{1}{2}x + 6$

b)

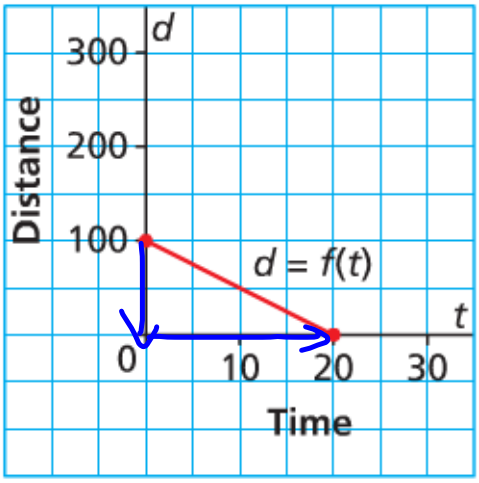


$y = mx + b$

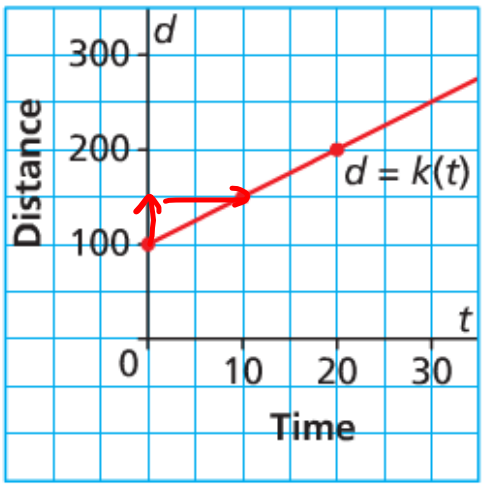
$y = \frac{1}{2}x + 6$

Which graph has a rate of change of -5 and a vertical intercept of 100? Write the equation for each, and the function notation.

a)



b)



$m = \frac{-100}{20} = -5$ $y = mx + b$ $y = -5x + 100$

$m = \frac{50}{10} = 5$ $y = 5x + 100$

State the Y-Intercept & the Rate of Change

Hint y-int = initial amount

a) $y = 5x - 4$

y-int = -4

$y = mx + b$

b) $C = 10 + 0.56t$

y-int = 10

$C = 0.56t + 10$

c) $D(h) = -4h + 200$

y-int = 200

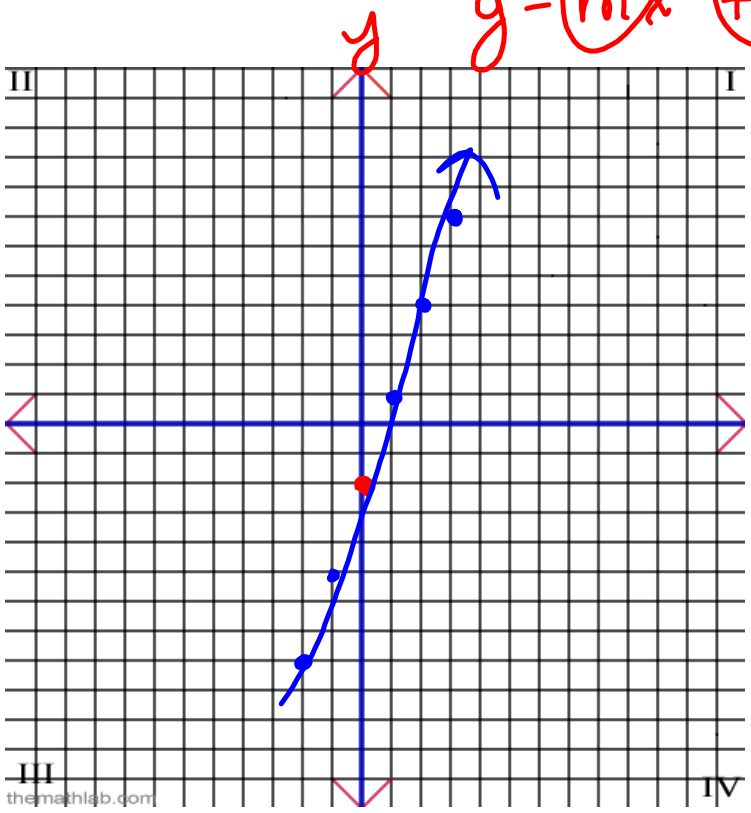
Graph the equation $y = 3x - 2$

$y = mx + b$

$\frac{-3}{-1}$ same

Slope: $\frac{3}{1}$ rise / run

y-int: -2

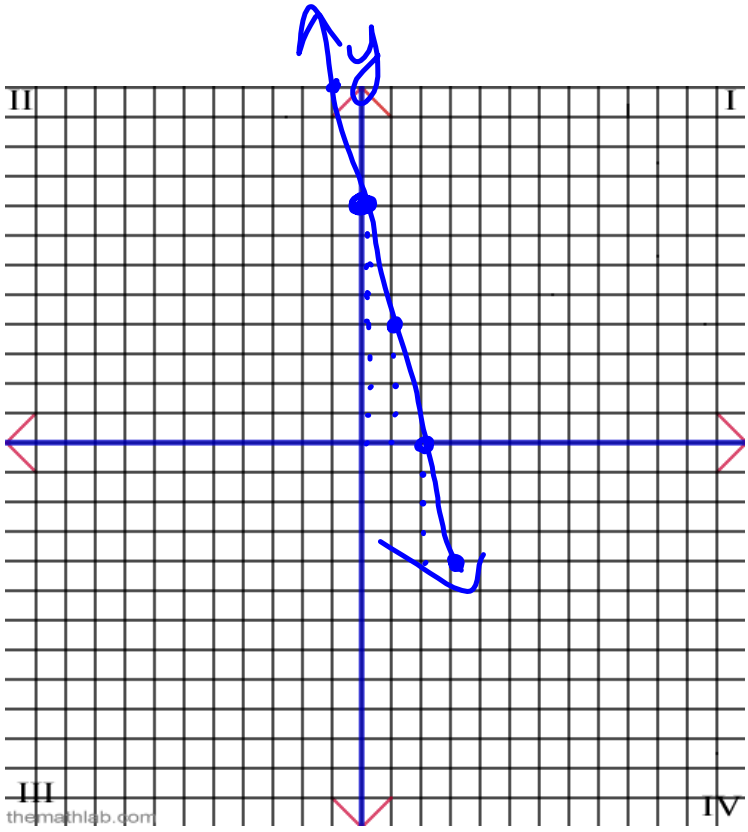


Graph the function y(x) = -4x +8

Same $= \frac{4}{1}$

Slope: $\frac{-4}{1}$

y-int: 8



Graph the equation c = 5t - 3

Same $\frac{-5}{-1}$

Slope: $\frac{5}{1}$

y-int: -3