

4-2 Questions

$$44.) \quad y = 100x + 5000$$

$$a.) \quad d(t) = 100t + 5000 \quad \text{Deposits (+)}$$

$$b.) \quad y = +250x + 600 \quad \text{Withdraws (-)}$$

$$\rightarrow \quad w(t) = +250t + 600$$

$$c.) \quad B(t) = d(t) - w(t)$$

Balance = deposits - withdraws

$$d.) \quad B(t) = 100t + 5000 - (250t + 600)$$

$$= 100t + 5000 - 250t - 600$$

$$B(t) = -150t + 4400$$

$$150t = 4400$$

$$t = 29 \text{ weeks}$$

46.)

$$\begin{array}{r} 111.25 = 17c + 22 \\ -22 \quad \quad -22 \\ \hline \end{array}$$

$$\frac{89.25}{17} = \frac{17}{17}c$$

a.)

$$5.25 = c$$

b.) $y = 5.25x + 22.00$

22.)

0	5	} +15
1	20	
2	35	

$$\frac{35 - 5}{2 - 0} = \frac{30}{2} = 15$$

$m = 15$

a.) $y = 15x + 5$ ($x = \text{seconds}$)

c.) $y = 15(10) + 5$
 $150 + 5$
 $y = 155 \text{ ft.}$

$$36.) \left(\frac{5}{4}, 1 \right) \left(-\frac{1}{4}, \frac{3}{4} \right)$$

Given Two Points

$$y = mx + b$$

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

$$m = \frac{\frac{3}{4} - 1}{-\frac{1}{4} - \frac{5}{4}} = \frac{-\frac{1}{4}}{-\frac{3}{2}} \quad \left(m = \frac{1}{6} \right)$$

$$y = m(x + b)$$

Point - Slope Form

$$y - y_1 = m(x - x_1)$$

$$y - \frac{5}{4} = \frac{1}{6}(x - 1)$$

$$y - \frac{5}{4} = \frac{1}{6}x - \frac{1}{6}$$

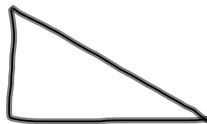
$$y = \frac{1}{6}x + \frac{19}{24}$$

Slope Foldable

Finding the Slope

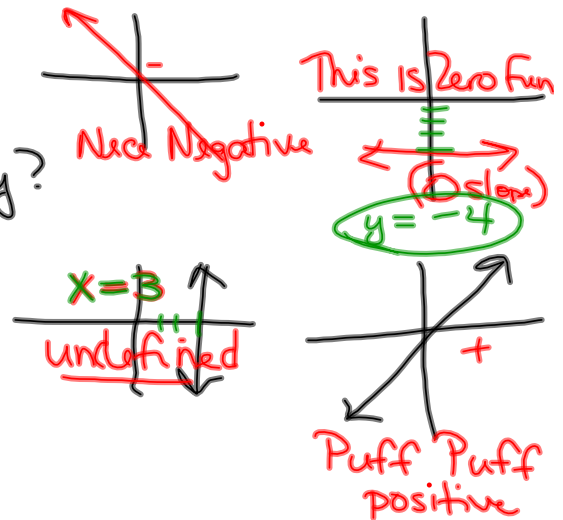
- Write a linear equation

Page 1: Finding Slope from a Graph

$$\text{Slope} = \frac{\text{rise} \uparrow}{\text{run} \rightarrow} = \frac{\text{Height}}{\text{width}}$$


Remember:

- Count spaces not lines
- Always reduce (simplify)
- What would slope dude say?
WWSDS



Need Negative

This is Zero Fun (0 slope)

$y = -4$

$x = 3$
undefined

Puff Puff positive

<p>Standard form $Ax + By = C$</p>	<p>(x, y) Direct Variation $y = kx$ <i>slope</i></p>	<p>Slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ <i>slope</i></p>
<p>Slope Intercept form $y = mx + b$ <i>slope</i> <i>y intercept</i></p>	<p>(x, y) Point Slope form $y - y_1 = m(x - x_1)$</p>	

Forms of Linear Equations

Write an Equation Given one point and Slope
(Point) (Slope)

$$\begin{matrix} (x, y) \\ (x_1, y_1) \end{matrix} y - y_1 = m(x - x_1)$$

Example: Write an equation of the line that has a slope of -4 and passes through (2, -3)

$$(2, -3); m = -4$$

$$y - (-3) = -4(x - 2)$$

$$y + 3 = -4x + 8$$

$$y = -4x + 5$$

Write an equation Given Two Points

Example: Write an equation that passes through the points $(2, -3)$ and $(4, 7)$

$$m = \frac{7 - (-3)}{4 - 2} = \frac{7 + 3}{2} = \frac{10}{2} \quad (m = 5)$$

- Choose one point (either one!)
- Substitute $(2, -3)$
- Put this into point-slope form

$$y - y_1 = m(x - x_1)$$

$$y - (-3) = 5(x - 2)$$

$$y + \frac{3}{-3} = 5x - \frac{10}{-3}$$

$$\boxed{y = 5x - 13}$$

Write an equation given point-slope form

$$y - y_1 = m(x - x_1)$$

$$\text{slope} = -4$$

$$\text{point} = (2, -3)$$

Substitute:

$$y - (-3) = -4(x - 2)$$

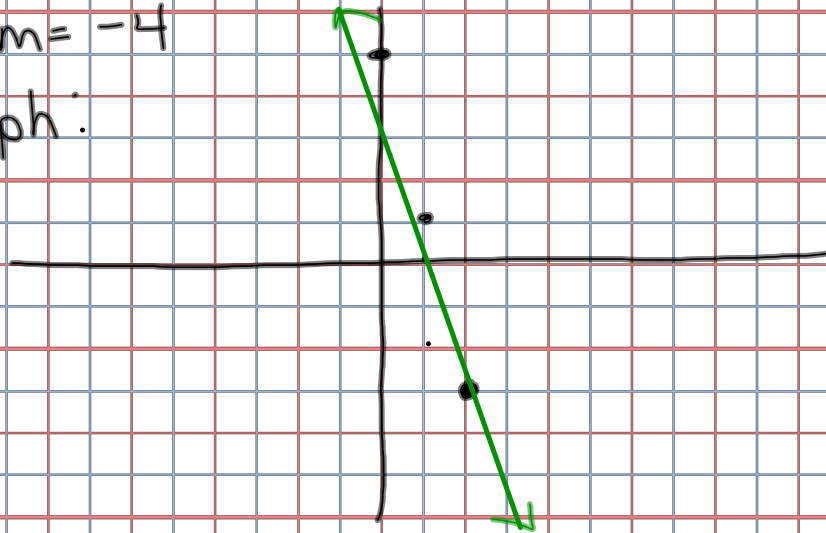
$$\boxed{y + 3 = -4(x - 2)}$$
 Point Slope form

$$y + \cancel{3} = -4x + \cancel{8} - \frac{8}{3}$$

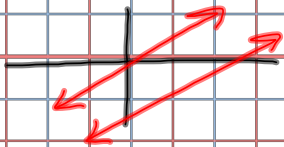
$$\boxed{y = -4x + 5}$$
 Slope-intercept form

$$(2, -3) \quad m = -4$$

Then graph:



Parallel Lines



Parallel Lines have the same slope!

Write an equation in slope-intercept form for a line that passes through $(-3, 5)$ and is parallel to the graph of $y = 2x - 4$.

Put this into point-slope

$$y - y_1 = m(x - x_1)$$

$$y - 5 = 2(x - (-3))$$

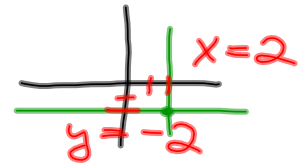
$$y - 5 = 2(x + 3)$$

$$y - 5 = 2x + 6$$

$$y = 2x + 11$$

Perpendicular Lines

- intersect at right angles
- opposite reciprocals
(+, -)



$$m = \frac{4}{1} \quad \text{Perpendicular line} = -\frac{1}{4}$$

$$m = \frac{2}{3} \quad m = -\frac{3}{2} \quad \text{Product} = -1$$

$$\boxed{\frac{2}{3} \cdot -\frac{3}{2} = -1}$$

Write an equation in slope-intercept form for a line that passes through $(-4, 6)$ and is perpendicular to the graph of $2x + 3y = 12$

Put into slope intercept form

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

$$\begin{array}{r} 2x + 3y = 12 \\ -2x \quad -2x \\ \hline 3y = -\frac{2}{3}x + \frac{12}{3} \end{array}$$

Find the perpendicular slope

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

$$\boxed{y = -\frac{2}{3}x + 4}$$

Put it into point slope form

$$y - 6 = \frac{3}{2}(x - (-4))$$

$$y - 6 = \frac{3}{2}x + 6$$

$$\boxed{y = \frac{3}{2}x + 12}$$