

The slide features a light beige background with a blue grid pattern in the top-left and bottom-right corners. A dark blue rectangular area is positioned on the left side, containing the text. A vertical red bar is located on the far left edge of the slide.

Algebra 1

Chapter 5
Section 5-4

Slope Equation Review

$$y = kx$$

$$m = \frac{Y_2 - Y_1}{X_2 - X_1}$$

$$y = mx + b$$

Point-Slope Form

Called "Point-Slope" because it uses one point (x_1, y_1) and the slope (m) .

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

Example:

$m = -2$, point: $(6, -3)$

$$y - (-3) = -2 (x - 6)$$

Equation
stays in
terms of
y and x

Using Point-Slope to Find a Slope-Intercept Equation

Write the equation of the line with a slope of 4 passing through point (2, 10)

$$y - 10 = 4(x - 2)$$

Plug in the slope and coordinates

$$y - 10 = 4x - 8$$
$$+10 \quad +10$$

Distribute the four into the ()

$$y = 4x + 2$$

Add ten to both sides to solve for y

Using Point-Slope to Find a Slope-Intercept Equation

Write the equation of the line with a slope of $-\frac{2}{5}$ passing through point $(1, -5)$

$$y - (-5) = -\frac{2}{5}(x - 1) \quad \text{Plug in the slope and coordinates}$$

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

Change "- (-5)" to "+ 5"
Distribute neg. two fifths into the ()

$$y = -\frac{2}{5}x - \frac{23}{5}$$

Subtract five (or $\frac{25}{5}$) from both sides to solve for y

Using Point-Slope to Find a Slope-Intercept Equation

Write the equation of the line with a slope of $-\frac{3}{2}$ passing through point $(-8, 0)$

$y - 0 = -\frac{3}{2}(x - (-8))$ Plug in the slope and coordinates

$y = -\frac{3}{2}(x + 8)$ Change " $- (-8)$ " to " $+ 8$ "
Drop " $+ 0$ " because $y + 0$ is y

$y = -\frac{3}{2}x - 12$ Distribute neg. three halves into ()

Using Point Slope to Graph

What is the graph of the equation $y - 1 = \frac{2}{3}(x - 2)$?

Step 1

Step 2

Step 3

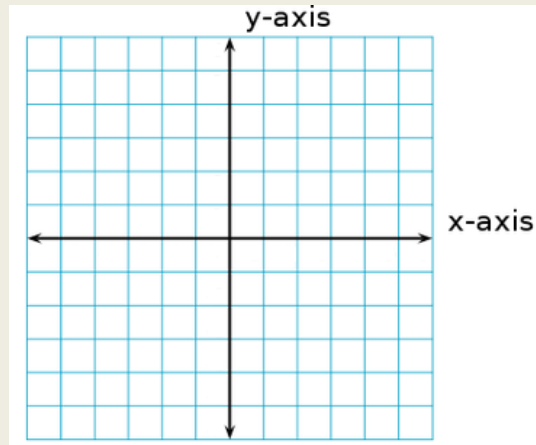
Graphing

Graph:

$$y - 3 = \frac{2}{3}(x - 1)$$

$$y + 4 = \frac{1}{2}(x + 2)$$

$$y - 5 = -7(x + 6)$$



Start at ordered pair (1, 3) then go up two and right three to point (4, 5). Draw a line through the points.

Start at ordered pair (-2, -4) then go up one and right two to point (0, -3). Draw a line through the points.

Start at ordered pair (-6, 5) then go down seven and right one to point (-5, -2). Draw a line through the points.

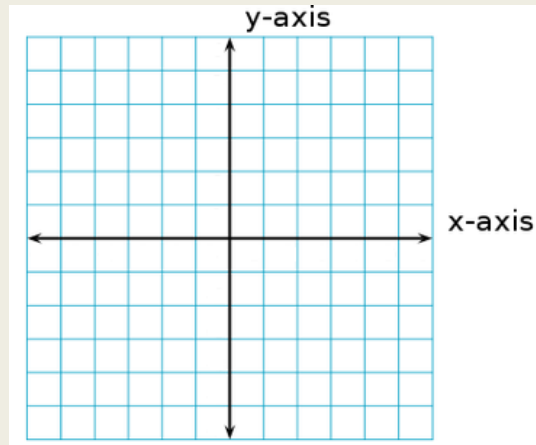
Graphing

Graph:

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

$$y + 4 = \frac{1}{2}x$$

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



Start at y-intercept of -3 [ordered pair (0, -3)] then go up five and right three to point (3, 2). Draw a line through the points.

Start at ordered pair (0, -4) then go up one and right two to point (2, -3). Draw a line through the points.

Start at ordered pair (0, 0) then go down one and right five to point (5, -1). Draw a line through the points.

Using Two Points to Find an Equation

Write the equation of the line passing through points $(-2, 3)$ and $(4, -3)$

Find the slope

Plug slope and one set of coordinates into Point-Slope Form

Change " $- (-)$ " to " $+$ "

Solve for y variable.

Rise: $-3 - 3 = -6$
Run: $4 - (-2) = 6$
Slope: $-6 / 6 = -1$

Plug in slope and ONE point into the Point-Slope Form:

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

$$y - 3 = -1(x - (-2))$$

$$y - 3 = -1x - 2$$

$$y = -1x + 1$$

(Change " $- (-2)$ " to " $+ 2$ " and Distribute in -1)
(Add 3 to both sides)

Using Two Points to Find an Equation

Write the equation of the line passing through points $(-1, 0)$ and $(0, 3)$

Find the slope

Plug slope and one set of coordinates into Point-Slope Form

Change " $- (-)$ " to " $+$ "

Solve for y variable.

$$\text{Rise: } 3 - 0 = 3$$

$$\text{Run: } 0 - (-1) = 1$$

$$\text{Slope: } 3 / 1 = 3$$

Plug in slope and ONE point into the Point-Slope Form:

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

$$y - 0 = 3(x - (-1))$$

Distribute in 3)

$$y = 3x + 3$$

(Change " $y - 0$ " to " y " and, Change " $- (-1)$ " to " $+ 1$ ", and