

Lesson 5-3b

Objective- To use slope and y-intercept to graph lines.

Graph the line which passes through $(-2, 1)$ and has a slope of -3 .

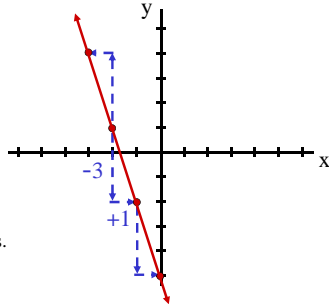
Steps

- 1) Plot the point.
- 2) Write slope as fraction and count off other points.

$$m = -3 = \frac{-3}{1}$$

$$\text{or } m = \frac{3}{-1}$$

- 3) Draw line through points.



Graph the line which passes through $(3, 2)$ and has a slope of $\frac{3}{4}$.

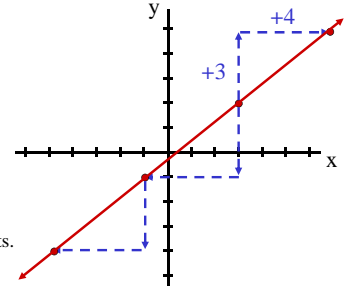
Steps

- 1) Plot the point.
- 2) Write slope as fraction and count off other points.

$$m = \frac{3}{4}$$

$$\text{or } m = \frac{-3}{-4}$$

- 3) Draw line through points.



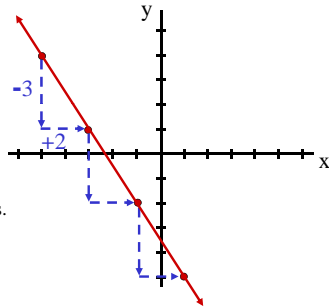
Graph the line which passes through $(-5, 4)$ and has a slope of $-\frac{3}{2}$.

Steps

- 1) Plot the point.
- 2) Write slope as fraction and count off other points.

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

- 3) Draw line through points.



Slope-Intercept Form of the Linear Equation

$$y = mx + b$$

Any linear equation which is solved for y is in slope-intercept form.

Find the slope and y-intercept of the following linear equations:

- | | |
|---------------------------------------|--|
| 1) $y = 3x + 4$
$m = 3$ $b = 4$ | 4) $y = \frac{5}{8}x - 4$ $m = \frac{5}{8}$ $b = -4$ |
| 2) $y = -2x - 1$
$m = -2$ $b = -1$ | 5) $y = -\frac{2}{9}x - \frac{1}{4}$ $m = -\frac{2}{9}$ $b = -\frac{1}{4}$ |
| 3) $y = 5x$
$m = 5$ $b = 0$ | 6) $y = 6$
$m = 0$ $b = 6$ |

Slope-Intercept Form of the Linear Equation

Write a linear equation in the form $y = mx + b$ given the following.

- | | |
|---|---|
| 1) $m = 2, b = -3$
$y = 2x - 3$ | 4) $m = 0, b = 6$
$y = 6$ |
| 2) $m = \frac{2}{3}, b = 5$
$y = \frac{2}{3}x + 5$ | 5) $m = -\frac{1}{2}, b = 0$
$y = -\frac{1}{2}x$ |
| 3) $m = -\frac{3}{7}, y\text{-int.} = 2$
$y = -\frac{3}{7}x + 2$ | 6) $m = 1, b = -\frac{2}{3}$
$y = x - \frac{2}{3}$ |

Graph the following linear equation using slope and y-intercept.

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

Steps

- 1) Find the slope and y-intercept.

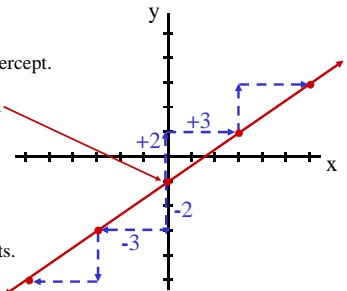
$$m = \frac{2}{3} \quad b = -1$$

- 2) Plot the y-intercept.

- 3) Plot the slope.

$$m = \frac{2}{3} \text{ or } m = \frac{-2}{-3}$$

- 4) Draw line through points.



Lesson 5-3b (cont.)

Graph the following linear equation using slope and y-intercept.

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

Steps

- 1) Find the slope and y-intercept.
 $m = -\frac{1}{2}$ $b = 4$
- 2) Plot the y-intercept.
- 3) Plot the slope.
 $m = \frac{-1}{2}$ or $m = \frac{1}{-2}$
- 4) Draw line through points.

Graph the equation below using the slope and y-intercept.

$$y = \frac{3}{5}x - 2$$

$$m = \frac{3}{5} = \frac{-3}{-5}$$

$$b = -2$$

Graph the equation below using the slope and y-intercept.

$$y = 2x + 3$$

$$m = 2 = \frac{2}{1} = \frac{-2}{-1}$$

$$b = 3$$

Graph the equation using slope and y-intercept.

$$5x - 2y = 6$$

$$\frac{-5x}{-2} = \frac{-5x + 6}{-2}$$

$$y = \frac{-5x}{-2} + \frac{6}{-2}$$

$$y = \frac{5}{2}x - 3$$

$$m = \frac{5}{2} \quad b = -3$$

Graph the equation using slope and y-intercept.

$$4x + 3y = 9$$

$$\frac{-4x}{3} = \frac{-4x + 9}{3}$$

$$y = \frac{-4x}{3} + \frac{9}{3}$$

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

$$m = \frac{-4}{3} \quad b = 3$$

Write a linear equation in slope-intercept form to describe each graph.

$$b = 3 \quad m = \frac{2}{1}$$

$$y = 2x + 3$$

$$b = -4 \quad m = \frac{-1}{3}$$

$$y = -\frac{1}{3}x - 4$$

Lesson 5-3b (cont.)

Write a linear equation to describe this situation and graph.

Kyle has \$300 and is saving \$25 a week.

Let x = # of weeks

Let y = savings in dollars

$$y = 25x + 300$$

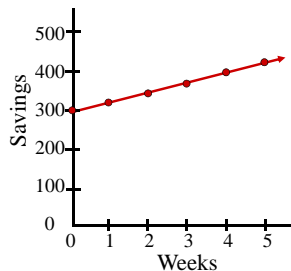
change ↗ start value ↗

$$y = mx + b$$

Slope ↗ Y-intercept ↗

$$m = \$25 / \text{week}$$

$$b = 300$$



Pam received \$100 and spends \$4 each week.

1) Write an equation for the money, y , she has after x weeks.

$$y = 100 - 4x$$

2) What are the slope and y-intercept?

$$m = -4$$

$$b = 100$$