

Lesson 6.4: Slope-Point Form

Specific Outcome: 6.2 – Rewrite a linear relation in either slope-intercept or general form. 6.3 – Generalize and explain strategies for graphing a linear relation in slope-point form. 6.4 – Graph, with and without technology, a linear relation given in slope-point form, and explain the strategy used to create the graph. 6.6 – Match a set of linear relations to their graphs. 7.2 – Write the equation of a linear relation, given its slope and the coordinates of a point on the line, and explain the reasoning. 7.3 – Write the equation of a linear relation, given the coordinates of two points on the line, and explain the reasoning. 7.4 – Write equation of a linear relation, given the coordinates of a point on the line and the equation of a parallel/perpendicular line, and explain the reasoning. 7.5 – Graph linear data generated from a context, and write the equation of the line.

$$\text{Slope-point Form: } y - y_1 = m(x - x_1)$$

where: $(x_1, y_1) = \text{a point on the line}$
 $m = \text{slope}$

Practice

1. Write an equation in *slope-point form* for the given information.

a) $P(1, -1)$ $m = -\frac{2}{3}$

b) $P(-7, -9)$ $m = -5$

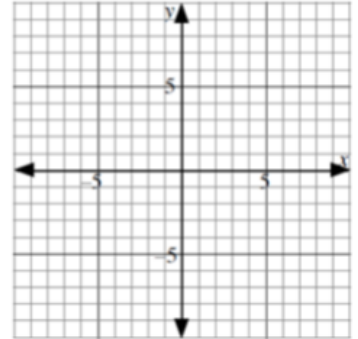
c) $m = \frac{5}{4}$ $P(3, 0)$

2. Describe the graph of the following linear functions. Graph each.

a) Line 1: $y - 2 = -3(x - 4)$

b) Line 2: $y + 1 = -\frac{1}{2}(x - 2)$

c) Line 3: $y - 6 = \frac{3}{5}(x + 3)$



Problem: A line passes through the points $R(2, -5)$ and $S(-3, -1)$. Write the equation of this line in slope-point form.

CHANGING SLOPE-POINT TO SLOPE-INTERCEPT

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

Practice: Change the following equations into slope-intercept form.

a) $y + 4 = -11(x + 1)$

b) $y - 6 = \frac{3}{5}(x + 3)$

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

d) Which of the following equations is equivalent to $y - 3 = -\frac{3}{4}(x + 7)$?

A. $y = \frac{3}{4}x + \frac{33}{4}$

C. $y = -\frac{3}{4}x - \frac{33}{4}$

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

D. $y = -\frac{3}{4}x - \frac{18}{4}$

Problems

1. A line passes through the points $A(3, -3)$ and $B(-5, 8)$. Write an equation for the line in slope-intercept form.

2. A line passes through $R(1, -1)$ and is **parallel** to the line $y = \frac{2}{3}x - 5$. What is the equation of this line in slope-intercept form?

3. A line has an x -intercept of -6 and is **perpendicular** to the line given as $y = -2x + 5$. Write the equation in slope-intercept form.