

Algebra I

Notes 5.4, Part 2 The Point-Slope Form of an Equation

- Objectives: Given a point and a slope, write an equation in the form $y - y_1 = m(x - x_1)$.
 Given two points, write an equation in the form $y - y_1 = m(x - x_1)$.

Using the linear form of an equation $y - y_1 = m(x - x_1)$ (called point-slope form),

m represents the _____ of the line; and

(x_1, y_1) represents a _____ on the line.

Examples:

1. Write an equation in *point-slope* form for a line with slope 2 containing the point (3, 4).

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

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

2. Write an equation in *point-slope* form for a line with slope -3 containing the point (1, -6).

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

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

3. Write an equation in *point-slope* form for a line with slope $\frac{1}{2}$ containing the point (-7, -8).

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

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

Practice: Write an equation in *point-slope* form for each line with the given slope and point.

4. slope 6; point (9, 5).

5. slope -4; point (-4, 8)

6. slope $\frac{1}{4}$; point (-10, -5)

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

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If you are given two points, find the *slope* first then use one of the *points* in the equation.

1. Write an equation in *point-slope* form for a line containing the points (6, 4) and (1, 5).

$$m = \frac{\quad}{\quad} =$$

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

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad}) \quad \text{or} \quad y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

2. Write an equation in *point-slope* form for a line containing the points (7, 2) and (-1, 3).

$$m = \frac{\quad}{\quad} =$$

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

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

3. Write an equation in *point-slope* form for a line containing the points (-4, 6) and (10, -5).

$$m = \frac{\quad}{\quad} =$$

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

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

Practice: Write an equation in *point-slope* form for each line with the given points.

4. (8, 3) and (9, 5).

$$m =$$

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

5. (-4, -6) and (4, -8)

$$m =$$

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

6. (-10, -5) and (5, 8)

$$m =$$

$$y - \underline{\quad} = \underline{\quad} (x - \underline{\quad})$$

7. (2, 1) and (-7, -5).

$$m =$$

8. (-1, -3) and (5, -1)

$$m =$$

9. (-12, 6) and (7, 18)

$$m =$$
