

Slope-Intercept form

$$y = mx + b$$

$m = \text{slope}$

$b = \text{y-intercept}$
(crosses y-axis)

Point-Slope form

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

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

$m = \text{slope}$

$(x_1, y_1) = \text{Given point}$

Point-Slope Form (Practice Worksheet)

Write an equation in point-slope form of the line that passes through the given point and has the given slope.

1) $(2, 7); m = -4$
 x_1, y_1

2) $(12, 5); m = -3$

3) $(4, -5); m = 6$

4) $(-6, -2); m = 3$

5) $(7, -6); m = \frac{1}{2}$

6) $(-8, 2); m = -\frac{3}{4}$

1) $y - y_1 = m(x - x_1)$
 $y - (7) = -4(x - 2)$
 $y - 7 = -4x + 8$
 $\quad \quad \quad +7 \quad \quad \quad +7$
 $y = -4x + 15$

3) $y - (-5) = 6(x - 4)$
 $y + 5 = 6x - 24$
 $y = 6x - 29$

4) $(-6, -2) m = 3$
 $y - (-2) = 3(x - (-6))$
 $y + 2 = 3(x + 6)$
 $y + 2 = 3x + 18$
 $y = 3x + 16$

Write an equation in point-slope form of the line that passes through the two points given. Use the first point to write the equation.

14 (4,7) and (5, 1)

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

$$\frac{1-7}{5-4} = \frac{-6}{1} = -6$$

$$y - 7 = -6(x - 4)$$

$$y - 7 = -6x + 24$$

$$y = -6x + 31$$

$$y - 1 = -6(x - 5)$$

$$y - 1 = -6x + 30$$

$$y = -6x + 31$$

15 (9, -2) and (-3, 2)

$$m = \frac{2 - (-2)}{-3 - 9} = \frac{4}{-12} = -\frac{1}{3}$$

$$y - (-2) = -\frac{1}{3}(x - 9)$$

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

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

16 (3, -8) and 7(-2)

