Slope-Intercept form

$y = mx + b$

m = slope

b = y-intercept
(crosses y-axis)

Point-Slope form

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

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

m = slope

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

$y-(7) = -4(x-2)$

$y - 7 = -4x + 8$

$+7 \qquad +7$

$y = -4x + 15$

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)