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
   x_1 y_1
3. (4, -5); m = 6
   x_1, y_1
4. (-6, -2); m = 3
5. (7, -6); m = $\frac{1}{2}$
6. (-8, 2); m = $-\frac{3}{4}$

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

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

$y - 7 = -4x + 8$

$+7 \quad +7$

$y = -4x + 15$

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

$y - 5 = -3(x - 12)$

$y - 5 = -3x + 36$

$y = -3x + 41$

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

$y - (-5) = 6(x - 4)$

$y + 5 = 6(x - 4)$

$y + 5 = 6x - 24$

$-5 \quad -5$

$y = 6x - 29$

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)

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

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

$y-7 = -6x+24$

$y = -6x+31$

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

$y-1 = -6x+30$

$y = -6x+31$

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

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

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

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

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

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

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

Slope-intercept Form

$y = mx + b$

m - slope

b - y-intercept

Point-Slope Form

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

m - slope

(x_1, y_1) — Given point on line

Solve for y

$y =$

$(2,7)$ $m=-4$

$x \quad y$

$y=mx+b$

$7=-4(2)+b$

$7=-8+b$

$b=15$

$y=-4x+15$

Plug in (x,y) and m then solve for b

$x \quad y$

$(4,7) \quad (5,1)$

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

$7=-6(4)+b$

$7=-24+b$

$b=31$

$y=-6x+31$

$$\frac{5}{3} - \frac{2 \times 3}{1 \times 3}$$

$$\frac{5}{3} - \frac{6}{3}$$