

Section 5.1 and 5.2

Writing Equations in Slope-Intercept Form

1. Write an equation of the line that passes through $(-8, 6)$ and has a slope of $-3/4$. $\leftarrow m$

$$y = mx + b \quad \longrightarrow$$

$$6 = -\frac{3}{4}(-8) + b$$

$$6 = 6 + b$$

$$b = 0$$

$$y = -\frac{3}{4}x$$

2. Write an equation of the line that passes through $(7, 5)$ and has a slope of 3.

$$y = mx + b$$

$$5 = 3(7) + b$$

$$5 = 21 + b$$

$$\underline{-21 \quad -21}$$

$$b = -16$$

$$y = 3x - 16$$

3. Write an equation of the line that passes through $(-3, 8)$ and $(4, -6)$.

$$y = mx + b$$

$$8 = -2(-3) + b$$

$$8 = 6 + b$$

$$b = 2$$

$$\frac{\Delta y}{\Delta x} = \frac{-14}{7} = -2$$

$$y = -2x + 2$$

4. Write an equation of the line that passes through $(3.2, -1.2)$ and $(1.9, 1.4)$.

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$$y = mx + b$$

$$1.4 = -2(1.9) + b$$

$$1.4 = -3.8 + b$$

$$+3.8 \quad +3.8$$

$$5.2 = b$$

$$\frac{\Delta y}{\Delta x} = \frac{-1.2 - 1.4}{3.2 - 1.9} = \frac{-2.6}{1.3} = -2$$

$$y = -2x + 5.2$$

Point-Slope Form

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

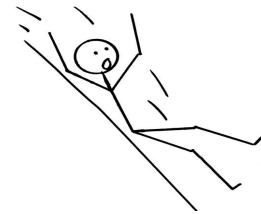
$m =$ Slope

$(x_1, y_1) =$ Point on the graph

Point



Slope



Form

5. Write an equation in point-slope form that passes through $(-2, 7)$ and has a slope of $-3/2$.

$$\begin{array}{ccccccc} y - y_1 & = & m & (x - x_1) & \Rightarrow & y - 7 & = & -\frac{3}{2} & (x + 2) \\ \uparrow & & \uparrow & \uparrow & & \uparrow & & & \uparrow \\ 7 & & -\frac{3}{2} & -2 & & & & & \end{array}$$

6. Write an equation in point-slope form that passes through $(-4, 9)$ and $(1, 5)$.

$$\frac{\Delta y}{\Delta x} = \frac{-4}{5}$$

$$y - 9 = -\frac{4}{5}(x + 4)$$

7. Write an equation in point-slope form that passes through (6, -4) and has a slope of -2.

$$y + 4 = -2(x - 6)$$

Now, get this equation into slope-intercept form.

$$\begin{aligned} y + 4 &= -2(x - 6) \\ y + 4 &= -2x + 12 \\ -4 &\quad -4 \\ \hline y &= -2x + 8 \end{aligned}$$

8. Write an equation in point-slope form that passes through (8, -4) and (-6, -11).

$$\frac{\Delta y}{\Delta x} = \frac{-7}{-14} = \frac{7}{14} = \frac{1}{2}$$

$$y + 4 = \frac{1}{2}(x - 8)$$