

To write an equation when given a point and a slope you can either solve the problem this way: $(3, 5)$ $m = \frac{2}{3}$

- Substitute the x , y , and m in the equation

$$y = mx + b \quad 5 = \frac{2}{3}(3) + b$$

- Solve for b

$$5 = 2 + b$$

$$3 = b$$

- Re-write the equation in slope intercept form (substitute the m and b)

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

Or you can use the
Point - Slope form

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

Given: $(3, 9)$ $m=2$

Substitute the values of the coordinates in for y_1 and x_1 and then substitute the slope in for m .

Next, solve the problem for y .

$$y - 9 = 2(x - 3)$$

$$y - 9 = 2x - 6$$

$$+9 \qquad +9$$

$$y = 2x + 3$$

Find the equation of the straight line that has slope $m = 4$ and passes through the point $(-1, -6)$.

$$(3, -2) \quad m = 8$$
$$y - \underline{y_1} = m(x - \underline{x_1})$$
$$y - (-2) = 8(x - 3)$$
$$y + 2 = 8x - 24$$
$$y = 8x - 26$$

Write each equation in Standard Form.

Standard Form : $Ax + By = C$

1. $7x + 2y - 11 = 0$

Write each equation in Standard Form.

Standard Form : $Ax + By = C$

2. $4x = 8y + 10$

Write each equation in Standard Form.

Standard Form : $Ax + By = C$

3. $-12x + 2 = 17y - 3$

Write each equation in Standard Form.

Standard Form : $Ax + By = C$

4. $4y = 2x - 8$

Write an equation in point-slope form for the line that has the given slope and the given point.

Point-Slope form: $y - y_1 = m(x - x_1)$

5. Slope $3/4$, $(4, 6)$

$$y - \underline{6} = \underline{3/4} (x - \underline{4})$$

$$y - \cancel{6} = \frac{3}{4}x - \cancel{3}$$

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

$$y - \underline{6} = \underline{3/4} (x - \underline{4})$$

$$\frac{3}{4} \cdot \frac{-4}{1} = \frac{-3}{1}$$

$$(-2, 7) \quad m = -\frac{1}{2}$$

$$y - 7 = -\frac{1}{2}(x - (-2))$$

$$\begin{array}{r} y - 7 = -\frac{1}{2}x - 1 \\ +7 \quad \quad +7 \\ \hline y = -\frac{1}{2}x + 6 \end{array}$$

Write an equation in point-slope form for the line that has the given slope and the given point.

Point-slope form: $y - y_1 = m(x - x_1)$

6. Slope -2, (3, 4)

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

$$y - 4 = -2(x - 3)$$

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

$$\begin{array}{r} +4 \quad \quad +4 \\ \hline \end{array}$$

$$y = -2x + 10$$

$$2) (-5, -6) \quad m=2$$

$$y - (-6) = 2(x - (-5))$$

$$y + 6 = 2x + 10$$

$$y = 2x + 4$$

$$3) (-7, 2) \quad m=3$$

$$y - 2 = 3(x - (-7))$$

$$y - 2 = 3x + 21$$

$$y = 3x + 23$$

$$4) (3, 5) \quad m=-2$$

$$y - 5 = -2(x - 3)$$

$$y - 5 = -2x + 6$$

$$y = -2x + 11$$

$$5) (6, -2) \quad m=-3$$

$$y - (-2) = -3(x - 6)$$

$$y + 2 = -3x + 18$$

$$y = -3x + 16$$

$$6) (5, -2) \quad m=2$$

$$y - (-2) = 2(x - 5)$$

$$y + 2 = 2x - 10$$

$$y = 2x - 12$$

$$7) (7, 0) \quad m=4$$

$$y - 0 = 4(x - 7)$$

$$y = 4x - 28$$

$$8) (0, 9) \quad m=-2$$

$$y - 9 = -2(x - 0)$$

$$y - 9 = -2x + 9$$

$$y = -2x + 18$$

$$9) (5, -1) \quad m=\frac{1}{5}$$

$$y - (-1) = \frac{1}{5}(x - 5)$$

$$y + 1 = \frac{1}{5}x - 1$$

$$y = \frac{1}{5}x - 2$$

$$16) (-3, -2) \text{ slope } \frac{1}{4}$$

$$y - (-2) = \frac{1}{4}(x - (-3))$$

$$y + 2 = \frac{1}{4}x + \frac{3}{4}$$

$$y = \frac{1}{4}x - 1\frac{1}{4}$$

$$y = \frac{1}{4}x - \frac{5}{4}$$