

Point-Slope Formula

If (x_1, y_1) is a point on a nonvertical line L and m is the slope of line L , then the equation of line L is given by the point-slope formula: $y - y_1 = m(x - x_1)$

Example:

Write the Standard Form of line L with slope $-\frac{4}{5}$ that passes through $(5,0)$.

(Note this is the x-intercept, therefore the Point-Slope formula is used.)

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

$$y - 0 = -\frac{4}{5}(x - 5)$$

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

Now change the Slope-Intercept form into Standard Form.

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

$$5y = 5\left(-\frac{4}{5}x\right) + 5(4) \text{ Standard Form is written without fractions.}$$

$$5y = -4x + 20$$

$$4x + 5y = 20 \text{ Note: The } Ax \text{ term must be } \underline{\text{positive}}. \text{ If it is negative, multiply by } -1.$$