

3.5 Point-Slope Form

So far we have only covered cases where you are provided with the necessary equation. This won't always be the case, however. We can use the *point-slope form* of an equation to construct one if we know *both the slope and a point on the line*.

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

In the above equation, x and y are variables that do not get replaced. The value m is replaced by the slope of the line and (x_1, y_1) is the point given on the line.

Example 3.5.1

Find the slope-intercept form of the line containing $(2, -5)$ with a slope of 6.

Example 3.5.2

Find the equation of the line containing the points $(-2, -1)$ and $(-1, -6)$.

Example 3.5.3

Find the equation of the line containing $(-2, 5)$ that is parallel to $y = 3x + 1$.

Example 3.5.4

Find the equation of the line passing through $(-2, -6)$ that is perpendicular to $x + 3y = 12$.