Exercise 74

For the following exercises, write the equation of the line satisfying the given conditions in slope-intercept form.

$$x\text{-intercept} = -6 \text{ and } y\text{-intercept} = 9$$

Solution

The x-intercept is the point where the line touches the x-axis, and the y-intercept is the point where the line touches the y-axis.

$$(-6, 0) \quad \text{and} \quad (0, 9)$$

Start by finding the slope of the line between these points.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - 0}{0 - (-6)} = \frac{9}{6} = \frac{3}{2}$$

The general equation for a line is

$$y = mx + b$$

In this exercise it's

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

Use the fact that the line goes through $(-6, 0)$ to find b.

$$0 = \frac{3}{2}(-6) + b$$

$$0 = -9 + b$$

$$b = 9$$

Therefore,

$$y = \frac{3}{2}x + 9.$$