Exercise 72

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

$$\text{Passing through } (-3, 7) \text{ and } (1, 2)$$

Solution

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

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 7}{1 - (-3)} = \frac{-5}{4} = -\frac{5}{4}$$

The general equation for a line is

$$y = mx + b$$

In this exercise it's

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

Use the fact that the line goes through $(1, 2)$ to find b.

$$2 = -\frac{5}{4}(1) + b$$

$$2 = -\frac{5}{4} + b$$

$$b = \frac{13}{4}$$

Therefore,

$$y = -\frac{5}{4}x + \frac{13}{4}.$$