Exercise 71

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

Passing through $(2, 1)$ and $(-2, -1)$

Solution

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

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 1}{-2 - 2} = \frac{-2}{-4} = \frac{1}{2}$$

The general equation for a line is

$$y = mx + b$$

In this exercise it's

$$y = \frac{1}{2}x + b.$$

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

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

$$1 = 1 + b$$

$$b = 0$$

Therefore,

$$y = \frac{1}{2}x.$$