

Exercise 36

For the following exercises, given each set of information, find a linear equation satisfying the conditions, if possible.

x intercept at $(-2, 0)$ and y intercept at $(0, -3)$

Solution

The general formula for the equation of a line is

$$y = mx + b.$$

The first condition says that when $x = -2$, $y = 0$.

$$0 = m(-2) + b$$

The second condition says that when $x = 0$, $y = -3$.

$$-3 = m(0) + b$$

This is a system of two equations with two unknowns that can be solved.

$$\begin{cases} -2m + b = 0 \\ b = -3 \end{cases}$$

Plug the value for b into the first equation.

$$-2m + (-3) = 0$$

Solve for m .

$$-2m = 3$$

$$m = -\frac{3}{2}$$

Now that m and b are solved for, the equation of the line is known.

$$y = -\frac{3}{2}x - 3$$