

Exercise 27

For the following exercises, find the x - and y -intercepts of the graphs of each function.

$$f(x) = -3|x - 2| - 1$$

Solution

Find the y -intercept first by plugging in $x = 0$.

$$f(0) = -3|0 - 2| - 1 = -3(2) - 1 = -7$$

Therefore, the y -intercept is $(0, -7)$. Now find the x -intercepts by setting $f(x) = 0$ and solving the equation for x .

$$f(x) = -3|x - 2| - 1 = 0$$

Isolate the absolute value term. Start by adding 1 to both sides.

$$-3|x - 2| = 1$$

Divide both sides by -3 .

$$|x - 2| = -\frac{1}{3}$$

The absolute value must be equal to a positive number. No value of x can satisfy this equation. Therefore, there's no solution and no x -intercept.

