

Exercise 26

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

$$f(x) = 4|x - 3| + 4$$

Solution

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

$$f(0) = 4|0 - 3| + 4 = 4(3) + 4 = 16$$

Therefore, the y -intercept is $(0, 16)$. Now find the x -intercepts by setting $f(x) = 0$ and solving the equation for x .

$$f(x) = 4|x - 3| + 4 = 0$$

Isolate the absolute value term. Start by subtracting 4 from both sides.

$$4|x - 3| = -4$$

Divide both sides by 4.

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

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.

