

Exercise 29

For the following exercises, find the intercepts of the functions.

$$f(x) = x(x^2 - 2x - 8)$$

Solution

In order to find the y -intercept, set $x = 0$.

$$f(0) = 0(-8) = 0$$

Therefore, the y -intercept is $(0, -8)$. To find the x -intercept(s), set $y = 0$ and solve the equation for x .

$$x(x^2 - 2x - 8) = 0$$

$$x = 0 \quad \text{or} \quad x^2 - 2x - 8 = 0$$

$$x = 0 \quad \text{or} \quad (x - 4)(x + 2) = 0$$

$$x = 0 \quad \text{or} \quad x - 4 = 0 \quad \text{or} \quad x + 2 = 0$$

$$x = 0 \quad \text{or} \quad x = 4 \quad \text{or} \quad x = -2$$

Therefore, the x -intercepts are $(-2, 0)$ and $(0, 0)$ and $(4, 0)$.

