

Exercise 16

For the following exercises, find the x - or t -intercepts of the polynomial functions.

$$f(x) = x^3 + 2x^2 - 9x - 18$$

Solution

To find the x -intercepts, set $f(x) = 0$ and solve the equation for x .

$$x^3 + 2x^2 - 9x - 18 = 0$$

$$x^2(x + 2) - 9(x + 2) = 0$$

$$(x^2 - 9)(x + 2) = 0$$

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

$$x + 3 = 0 \quad \text{or} \quad x - 3 = 0 \quad \text{or} \quad x + 2 = 0$$

$$x = -3 \quad \text{or} \quad x = 3 \quad \text{or} \quad x = -2$$

Therefore, the x -intercepts are $(-3, 0)$ and $(-2, 0)$ and $(3, 0)$.

