Exercise 14

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

$$f(x) = x^3 + 6x^2 - 7x$$

Solution

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

$$x^3 + 6x^2 - 7x = 0$$

$$x(x^2 + 6x - 7) = 0$$

$$x(x + 7)(x - 1) = 0$$

$$x = 0 \quad \text{or} \quad x + 7 = 0 \quad \text{or} \quad x - 1 = 0$$

$$x = 0 \quad \text{or} \quad x = -7 \quad \text{or} \quad x = 1$$

Therefore, the x-intercepts are $(-7, 0)$ and $(0, 0)$ and $(1, 0)$.