

Exercise 12

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

$$f(x) = x^4 - x^2$$

Solution

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

$$x^4 - x^2 = 0$$

$$x^2(x^2 - 1) = 0$$

$$x^2(x + 1)(x - 1) = 0$$

$$x^2 = 0 \quad \text{or} \quad x + 1 = 0 \quad \text{or} \quad x - 1 = 0$$

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

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

