

Exercise 18

For the following exercises, find the domain of each function using interval notation.

$$f(x) = \frac{1}{x^2 - x - 6}$$

Solution

You cannot divide by zero, so it's necessary that

$$x^2 - x - 6 \neq 0$$

Solve for x by factoring.

$$(x - 3)(x + 2) \neq 0$$

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

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

Therefore, the domain is $(-\infty, -2) \cup (-2, 3) \cup (3, \infty)$. This is reflected in the graph of $f(x)$ versus x .

