

Exercise 17

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

$$f(x) = \frac{x - 3}{x^2 + 9x - 22}$$

Solution

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

$$x^2 + 9x - 22 \neq 0$$

Solve for x by factoring.

$$(x + 11)(x - 2) \neq 0$$

$$x + 11 \neq 0 \quad \text{or} \quad x - 2 \neq 0$$

$$x \neq -11 \quad \text{or} \quad x \neq 2$$

Therefore, the domain is $(-\infty, -11) \cup (-11, 2) \cup (2, \infty)$. This is reflected in the graph of $f(x)$ versus x .

