

Exercise 25

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

$$f(x) = \frac{x^2 - 9x}{x^2 - 81}$$

Solution

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

$$x^2 - 81 \neq 0.$$

Solve for x .

$$(x + 9)(x - 9) \neq 0$$

$$x \neq -9 \quad \text{or} \quad x \neq 9$$

Therefore, the domain is $(-\infty, -9) \cup (-9, 9) \cup (9, \infty)$. This is reflected in the graph of $f(x)$ versus x .

