

## Exercise 19

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

$$f(x) = \frac{2x^3 - 250}{x^2 - 2x - 15}$$

### Solution

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

$$x^2 - 2x - 15 \neq 0$$

Solve for  $x$  by factoring.

$$(x - 5)(x + 3) \neq 0$$

$$x - 5 \neq 0 \quad \text{or} \quad x + 3 \neq 0$$

$$x \neq 5 \quad \text{or} \quad x \neq -3$$

Therefore, the domain is  $(-\infty, -3) \cup (-3, 5) \cup (5, \infty)$ . This is reflected in the graph of  $f(x)$  versus  $x$ .

