

## Exercise 20

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

$$f(x) = \frac{5}{\sqrt{x-3}}$$

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### Solution

You cannot take the square root of a negative number or divide by zero, so it's necessary that

$$x - 3 \geq 0 \quad \text{and} \quad \sqrt{x-3} \neq 0.$$

Solve for  $x$ .

$$x \geq 3 \quad \text{and} \quad x - 3 \neq 0$$

$$x \geq 3 \quad \text{and} \quad x \neq 3$$

Combine these two conditions.

$$x > 3$$

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

