Exercise 1

Write an equation that expresses the fact that a function f is continuous at the number 4.

Solution

For f to be continuous at $x = 4$, not only do the left-hand and right-hand limits there have to exist and be equal, but also $f(4)$ has to exist and satisfy

$$\lim_{x \to 4^-} f(x) = \lim_{x \to 4^+} f(x) = f(4).$$

This is expressed more compactly as

$$\lim_{x \to 4} f(x) = f(4).$$