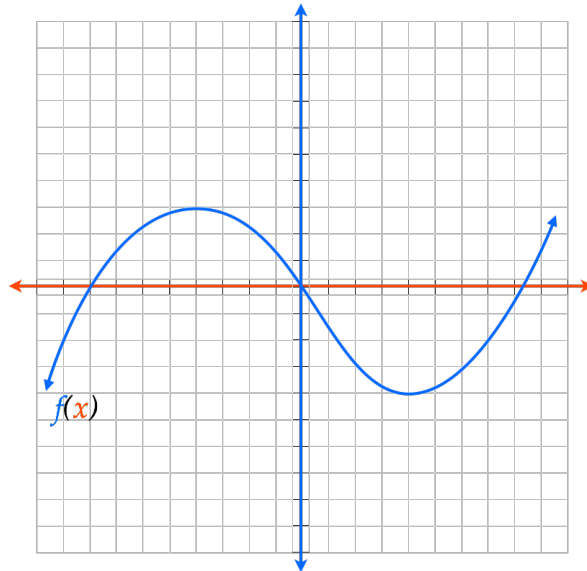# An Introduction to Limits and Limit Notation

Determine the value of $f(x)$ for the following values of x.

$x = -4$

$x = 7$

This process is evaluating a function, $f(x)$, at a specific value of x.

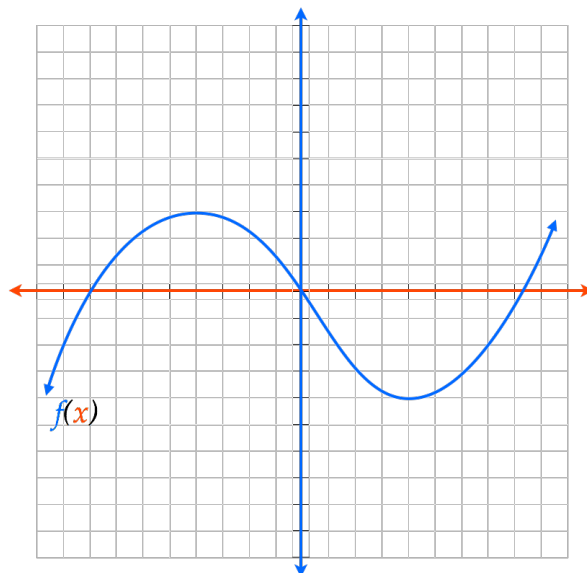Finding the Limit of a function is finding the value of a function, $f(x)$, as x approaches a specific value, c.

$f(x)$

Limit Notation

$$\lim_{x \to c} f(x)$$

"The limit of $f(x)$ as x approaches c."

Finding the Limit of a function is finding the value of a function, $f(x)$, as x approaches a specific value, c.

$f(x)$

Limit Notation

$$\lim_{x \to 3} f(x)$$

"The limit of $f(x)$ as x approaches 3."

Finding the Limit of a function is finding the value of a function, $f(x)$, as x approaches a specific value, c.

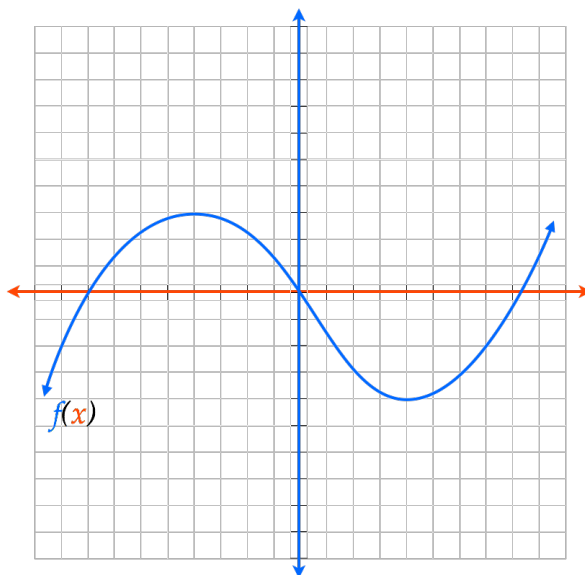$f(x)$

Limit Notation

$$\lim_{x \to -4} f(x)$$

"The limit of $f(x)$ as x approaches -4."

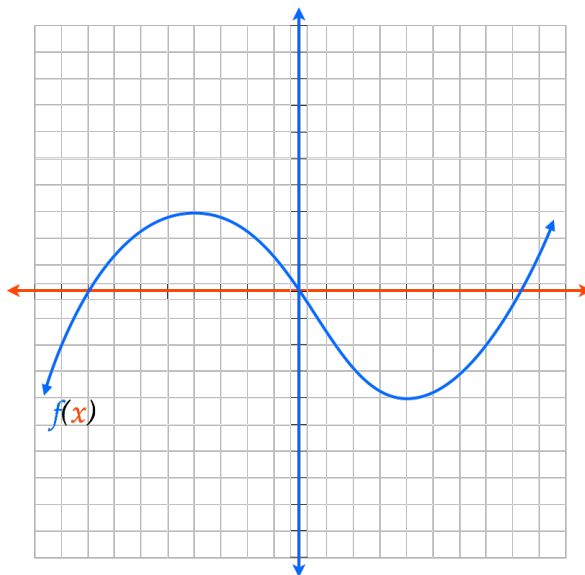Finding the Limit of a function is finding the value of a function, $f(x)$, as x approaches a specific value, c.

$f(x)$

$$\lim_{x \to 0} x^2 + 3x + 2$$

"The limit of $x^2 + 3x + 2$ as x approaches 0."

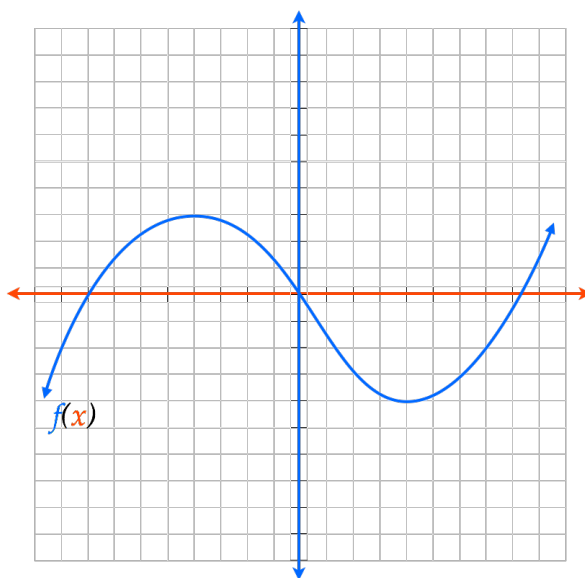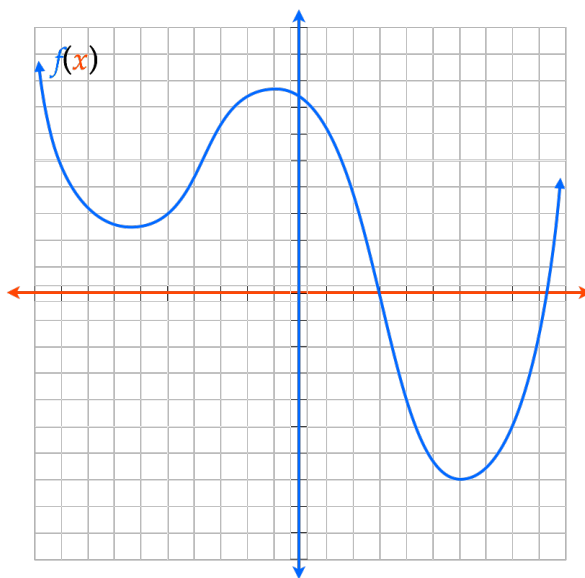Finding the Limit of a function is finding the value of a function, $f(x)$, as x approaches a specific value, c.

$f(x)$

Find the limit of $f(x)$ as x approaches the following values.

$$\lim_{x \to -5} f(x)$$

"The limit of $f(x)$ as x approaches -5."

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

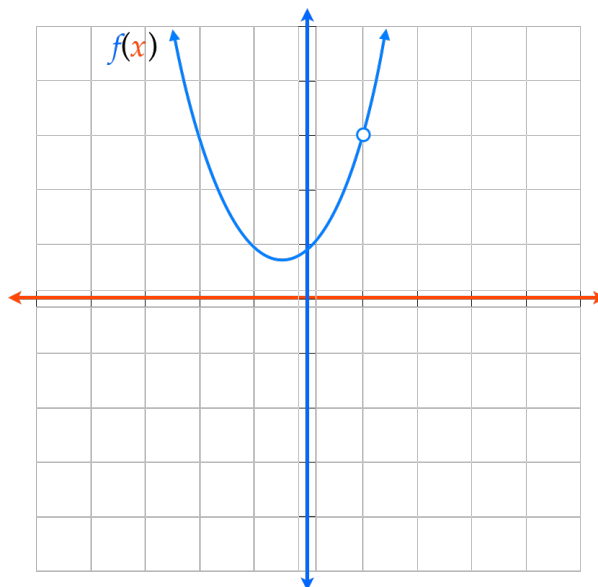"The limit of $f(x)$ as x approaches 4."

$f(x)$

$$f(x) = \frac{x^3 - 1}{x - 1}, \quad x \neq 1$$

$f(x)$ is undefined at $x = 1$
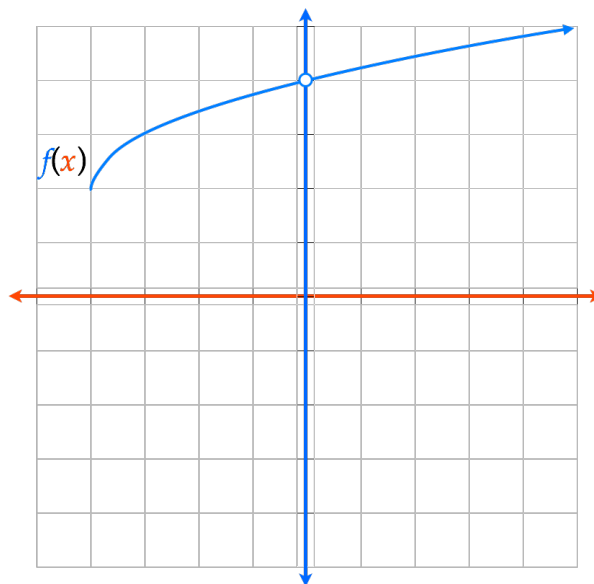
$$\lim_{x \to 1} f(x)$$

$$f(x) = \frac{x}{\sqrt{x + 4} - 2}$$

$f(x)$ is undefined at $x = 0$

$$\lim_{x \to 0} f(x)$$

$f(x) = \begin{cases} 2, & x \neq 3 \\ 4, & x = 3 \end{cases}$

$\lim\limits_{x \to 3} f(x)$

(3,4)

f(x)

Introduction to Limits and Limit Notation