

Definition of a Limit

DEFINITION Let $f(x)$ be defined on an open interval about x_0 , except about x_0 itself. We say that the **limit of $f(x)$ as x approaches x_0 is the number L** , and write

$$\lim_{x \rightarrow -5} \frac{x^2 + 6x + 5}{x + 5}$$

$$\lim_{x \rightarrow 0} \sqrt{4 - x} = 2$$

$$f(x) = 2x - 2 \quad x = -2 \quad \varepsilon = .02$$

$$f(x) = \frac{120}{x}$$

$$x = 24$$

$$\varepsilon = 1$$

Try It: $\lim_{x \rightarrow -3} \frac{x^2 - 9}{x + 3}$

Try It: $f(x) = \sqrt{x-1}$ $x = 5$ $\varepsilon = 1$