

One sided limits

By $\lim_{x \rightarrow a^+} f(x) = L$ we mean as x approaches a in the domain from the right hand side of a then $f(x)$ approaches L as we move along the curve.

In [Animation 1](#) $\lim_{x \rightarrow a^+} f(x) = 0$

By $\lim_{x \rightarrow a^-} f(x) = L$ we mean as x approaches a in the domain from the left hand side of a then $f(x)$ approaches L as we move along the curve.

In [Animation 2](#) $\lim_{x \rightarrow a^-} f(x) = 1$

If $\lim_{x \rightarrow a^+} f(x) = \lim_{x \rightarrow a^-} f(x) = L$ We say $\lim_{x \rightarrow a} f(x)$ exists and $\lim_{x \rightarrow a} f(x) = L$

If $\neg \lim_{x \rightarrow a^+} f(x) \neq \lim_{x \rightarrow a^-} f(x)$ We say $\lim_{x \rightarrow a} f(x)$ does not exist.

[See Animations Limit Does Not Exist and Limit Exists](#)