

$$f(x) = |x| = \begin{cases} x; & x \geq 0 \\ -x; & x < 0 \end{cases}$$

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

$$\text{L.L.: } \lim_{x \rightarrow 0} f(x)$$

$$\text{R.L.: } \lim_{x \rightarrow 0^+} f(x)$$



$$\lim_{x \rightarrow a} f(x)$$

$$\lim_{h \rightarrow 0} f(a+h)$$

$$\begin{matrix} x \rightarrow a \\ x = a \end{matrix}$$

$$\lim_{x \rightarrow 2} x^2 + 5 = 9$$

$$\lim_{h \rightarrow 0} (2+h)^2 + 5$$

$$2^2 + 5 = 9$$

$$f(x) = |x|$$

$$\lim_{x \rightarrow 0} f(x) = ?$$

$$f(x) = \begin{cases} x; & x \geq 0 \\ -x; & x < 0 \end{cases}$$

$$\lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^+} x$$

$$\lim_{x \rightarrow 0^-} f(x) = \lim_{x \rightarrow 0^-} (-x)$$

$$\lim_{h \rightarrow 0} (0+h) = 0$$

$$\lim_{h \rightarrow 0} (0-h) = 0$$

$$\text{R.L.} = \text{L.L.}$$

$$\lim_{x \rightarrow 0} f(x) \text{ exists}$$

$$\lim_{x \rightarrow 0} f(x) = 0$$

$$\lim_{x \rightarrow 5} g(x)$$

exists if

$$\lim_{x \rightarrow 5^+} g(x) = \lim_{x \rightarrow 5^-} g(x)$$