

**Definition 6.35.** [20D] Let  $I \subset \mathbb{R}$ ,  $x_0 \in \overline{\mathbb{R}}$  accumulation point of  $I$ ,  $f : I \rightarrow \mathbb{R}$  function,  $l \in \overline{\mathbb{R}}$ .

The idea of limit (right or left or bilateral) is thus expressed.

$\lim_{x \rightarrow x_0} f(x) = l$	for every "full" neighbourhood $V$ of $l$ , there exists a "deleted" neighbourhood $U$ of $x_0$ such that every $x \in U \cap I$ , you have $f(x) \in V$
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where the neighborhood  $U$  will be "right" or "left" if the limit is "right" or "left"; it can also be said that

$\lim_{x \rightarrow x_0} f(x) = l$	for every "full" neighbourhood $V$ of $l$ , you have $f(x) \in V$ eventually for $x$ tending to $x_0$
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adding that  $x > x_0$  if the limit is "right", or  $x < x_0$  if the limit is "left".