

Limit and Continuity : Infinite Limits

A function f is said to have limit l as $x \rightarrow \infty$ if for given $\epsilon > 0$, however small, there exist $0 < M \in \mathbb{R}$ s.t.

$$|f(x) - l| < \epsilon \quad \forall x > M$$

$$\lim_{x \rightarrow \infty} f(x) = l.$$



A function f is said to have limit l as $x \rightarrow -\infty$ if for $\epsilon > 0$, however small $\exists M > 0$ for $M \in \mathbb{R}$ s.t.

$$|f(x) - l| < \epsilon \quad \forall x < -M$$

$$\lim_{x \rightarrow -\infty} f(x) = l.$$