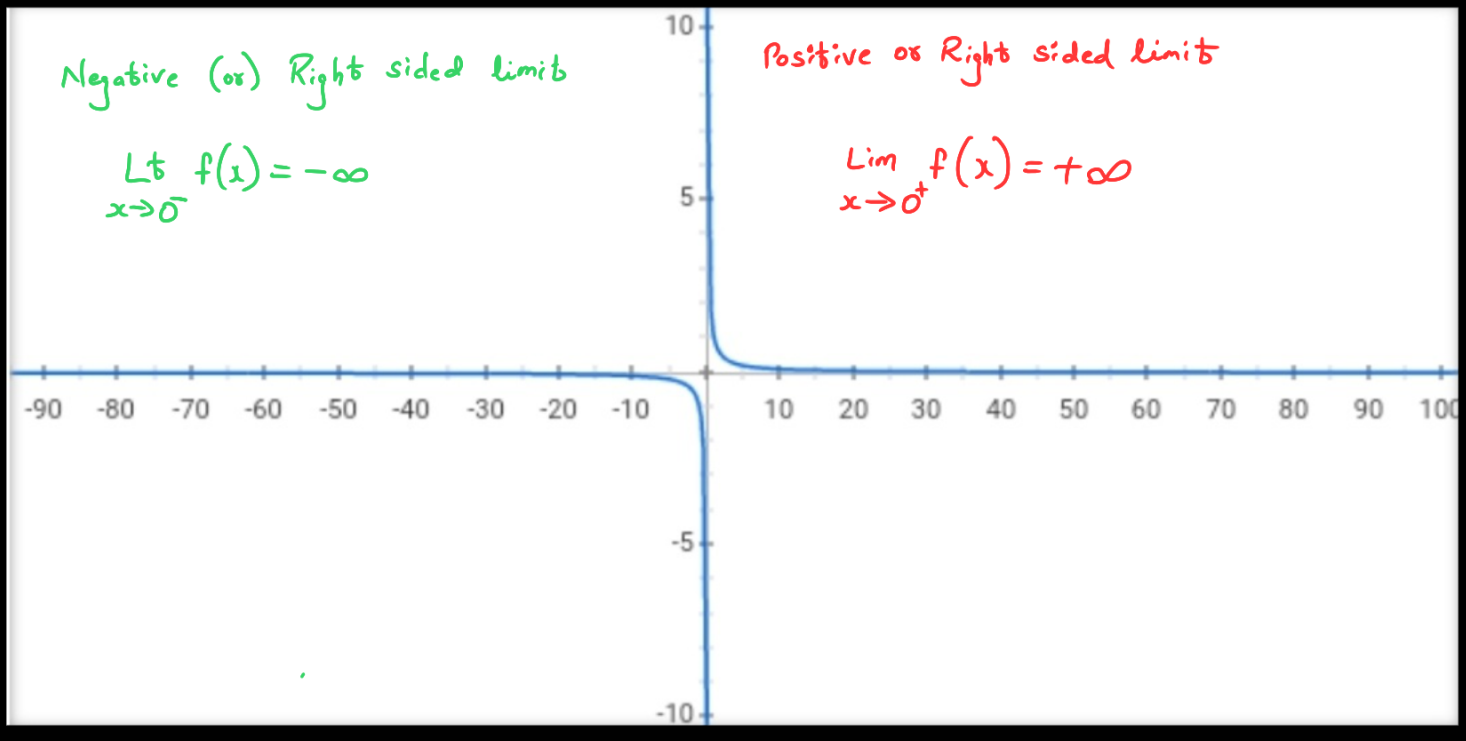
Functions and Limits:

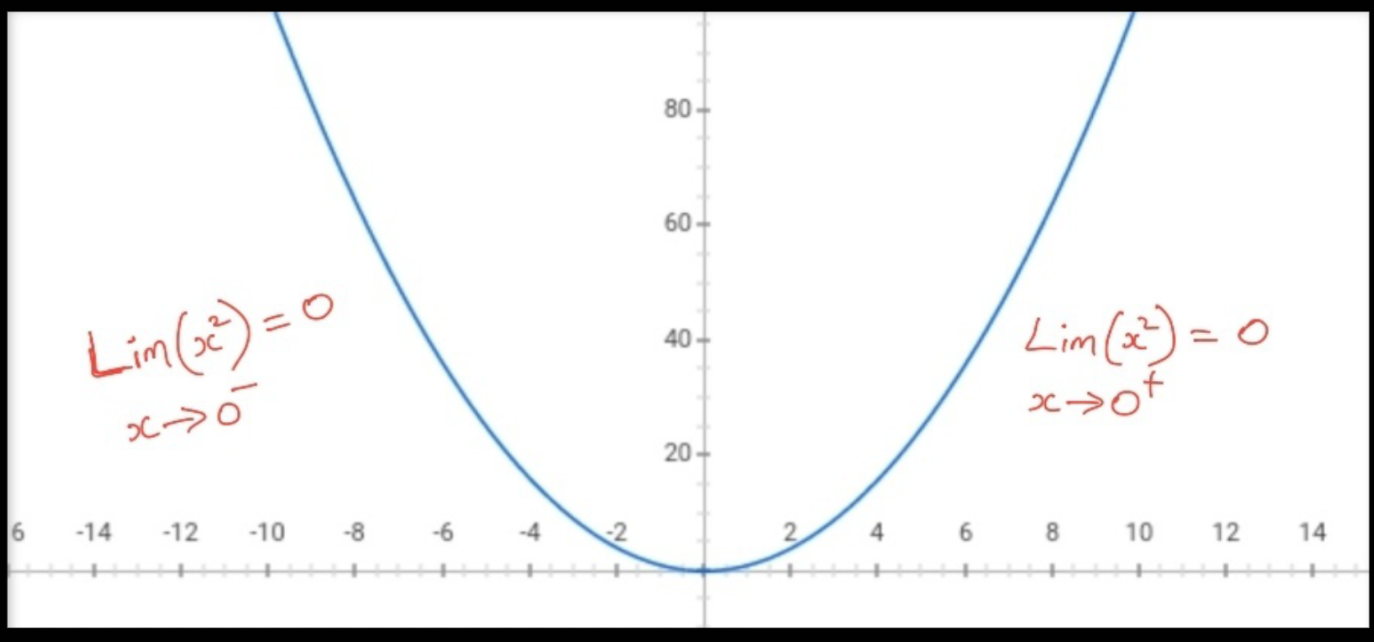
→ lets look at $y = \frac{1}{x}$



One side limit is the value which y is approaching as x tends to some value from the positive side or negative side.

Simillary we have one more Concept Called two sided limit which is illustrated below.

for $f(x) = x^2$

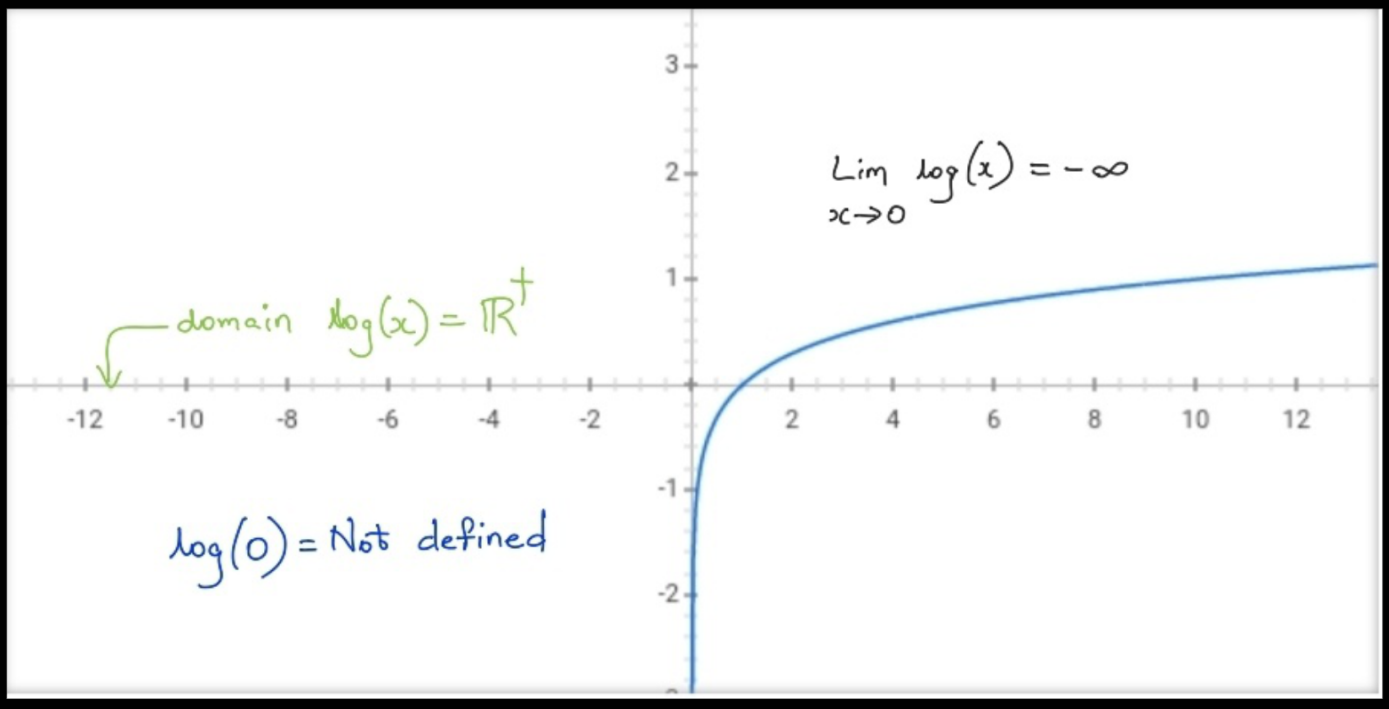


Here

$$\lim_{x \to 0^+}(x^2) = \lim_{x \to 0^-}(x^2) = \lim_{x \to 0}(x^2) = 0$$

As limit tends to zero $f(x)$ is moving towards same point from both +ve & -ve directions (Two sided limit)

for $f(x) = \log(x)$



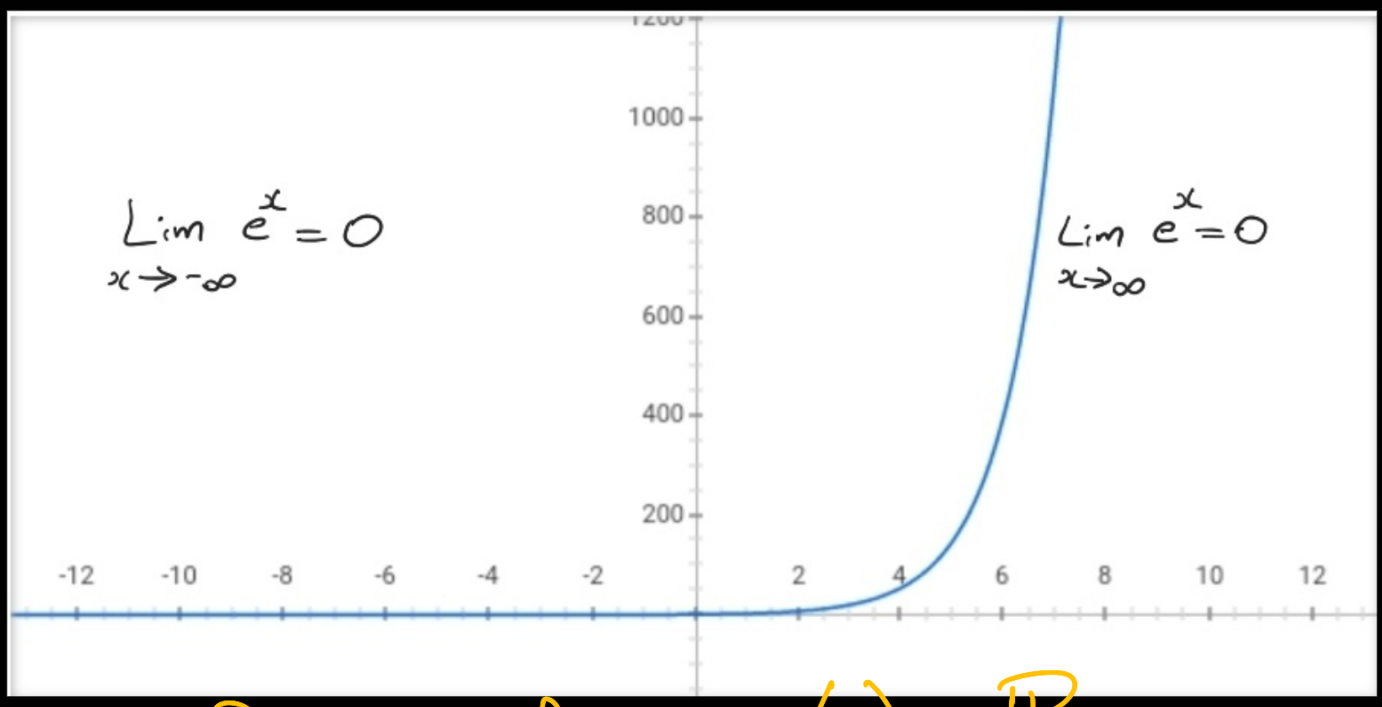
Domain of $\log(x) = \mathbb{R}^+$

⇒ Domain means the values of x for which $f(x)$ is defined.

Range of $\log(x) = \mathbb{R}$

⟶ Range is the all possible values of $f(x)$ $\forall$ x

Graph for $\exp(x)$:



Domain of $\exp(x) = \mathbb{R}$

Range of $\exp(x) = \mathbb{R}^+$

Graph for $Abs(x)$: