

One-Sided Limits

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

$x \rightarrow c^+$ right-hand limit

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

$x \rightarrow c^-$ left-hand limit

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

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

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

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

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

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

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

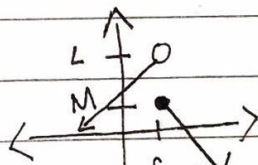
$$\lim_{x \rightarrow c^-} f(x) = M$$

$$\lim_{x \rightarrow c} f(x) = L$$

$$\lim_{x \rightarrow c} f(x) = L$$

$$\lim_{x \rightarrow c} f(x) \text{ DNE}$$

$$\lim_{x \rightarrow c} f(x) = L$$



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

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

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

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

$$\lim_{x \rightarrow c} f(x) \text{ DNE}$$

$$\lim_{x \rightarrow c} f(x) = L$$



$f(c)$ undefined - hollow

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

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

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

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

$$\lim_{x \rightarrow c} f(x) = L$$

$$\lim_{x \rightarrow c} f(x) = L$$



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

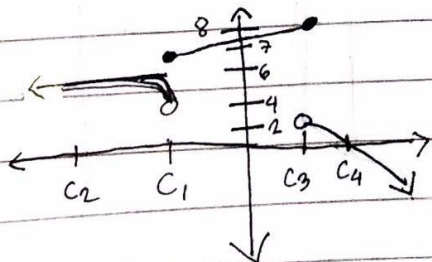
$$\lim_{x \rightarrow c^-} f(x) = L$$

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

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

$$\lim_{x \rightarrow c} f(x) = L$$

$$\lim_{x \rightarrow c} f(x) = L$$



$$\lim_{x \rightarrow c_1} f(x) \text{ DNE}$$

$$\lim_{x \rightarrow c_1} f(x) = 6$$

$$\lim_{x \rightarrow c_2} f(x) = 6$$

$$\lim_{x \rightarrow c_2} f(x) = 6$$

$$\lim_{x \rightarrow c_3} f(x) \text{ DNE}$$

$$\lim_{x \rightarrow c_3} f(x) = 0$$

$$\lim_{x \rightarrow c_4} f(x) = 0$$

$$\lim_{x \rightarrow c_4} f(x) = 0$$