

Sec 2.3 : One side limits

$$\lim_{t \rightarrow 0} \cos\left(\frac{\pi}{t}\right)$$

$\lim_{t \rightarrow 0} H(t)$ where

did not exist, X settle down 1 value
 $t \rightarrow 0$ closer 0 + more functions

$$\lim_{t \rightarrow 0} H(t), H(t) = \begin{cases} 0 & \text{if } t < 0 \\ 1 & \text{if } t > 0 \end{cases}$$

$\lim_{t \rightarrow 0} X$ exist, settle down into 2 dif
 numbers

In one side I look at \rightarrow or \leftarrow
 not both

one, Right handed

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

$f(x)$ closes to L as we want $\forall \epsilon$ sufficient
 close a $x > a$, with out $x = a$
 left hand

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

$$x < a$$

one sided limit do not care about the
 point // any side \checkmark around k is
 they change x then we look at
 look at the first \checkmark last E

fact
 a function $f(x)$

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

$$\Rightarrow \text{nondecreasing limit will } \checkmark$$

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

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

this fact is wrong will reject

$$\Rightarrow \lim_{x \rightarrow a^+} f(x) \neq \lim_{x \rightarrow a} f(x)$$