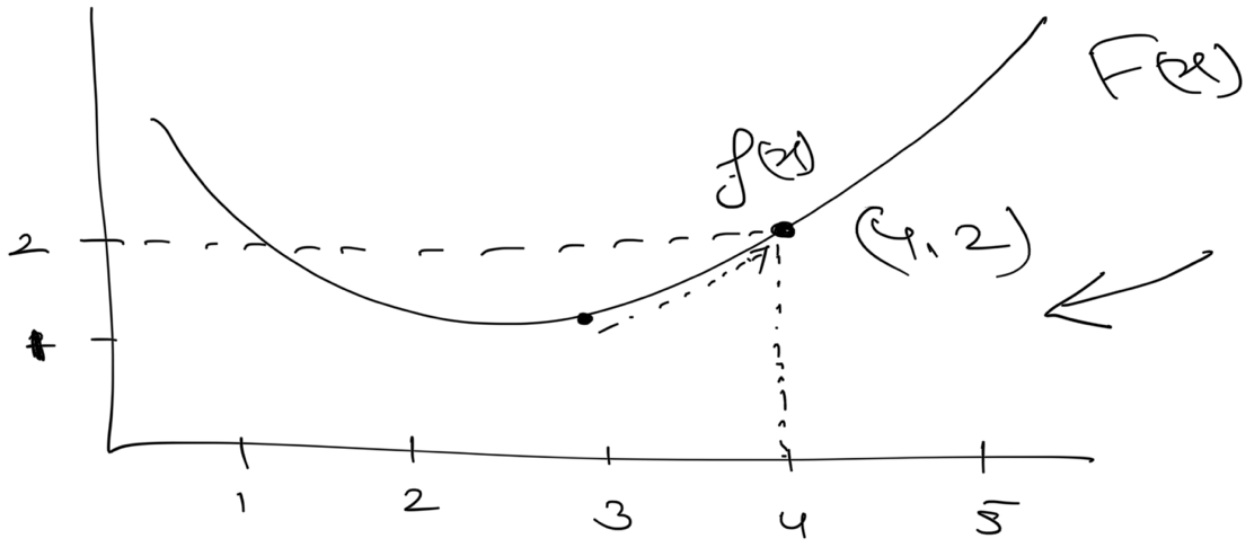
Basic Calculus Part 2

⇒ Limit at a point



L·H·L

$\lim_{x \to 4^-} f(x) \Rightarrow 2$

3.1, 3.2, ... 3.9
3.99,

R·H·L

$\lim_{x \to 4^+} f(x) \Rightarrow 2$

5.1, 5.01, 5.001, 5.0001

$\downarrow fx$

$\lim_{x \to 3^-} (x^2) \Rightarrow 9$

L·H·L

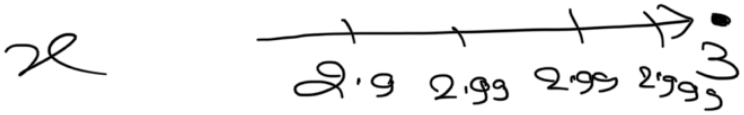
$x \to 2.9 \Rightarrow f(x) \to 8.41$

$x \to 2.99 \Rightarrow f(x) \to 8.94$

$x \to 2.999 \Rightarrow f(x) \to 8.994$

$x \to 2.9999 \Rightarrow f(x) \to 8.9994$

$y \to 9$



$y = (x^2) \leftarrow 2.9$

R.H.L

x^2

$$\lim f(x) \Rightarrow \boxed{9}$$

$x \to 3^+$

4.1 → 16.81

3.9 → 15.21 ⇒ 9

3.7 → 13.69

3.10 → 9.61

3.001 → 9.006

3.0001 → 9.000601

To check continuity you have to evaluate if

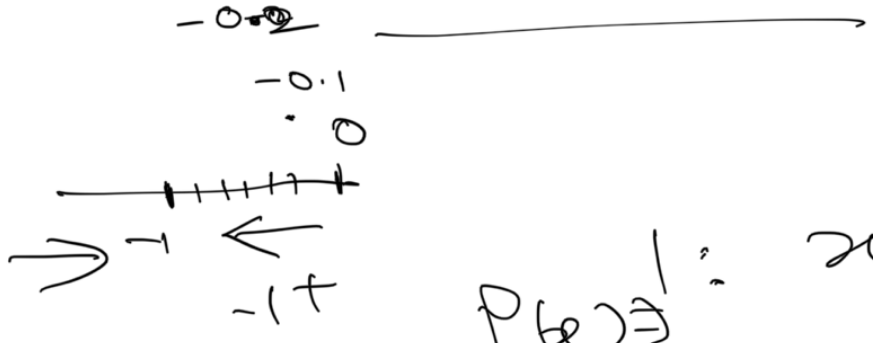
L.H.L == R.H.L

$\lim_{x \to a^-} f(x) == \lim_{x \to a^+} f(x)$

-0.99

-0.9

-0.3



$$f(x) = \begin{cases} 1 : & x > 0 \\ 0 : & x \leq 0 \end{cases}$$

$$\lim_{x \to -1^-} f(x) = 0$$

$$\lim_{x \to -1^+} f(x) = 0$$

-0.99
-0.9
-0.8
-0.7
-0.01

$$LHL = RHL$$

at $x = -1$

$f(x)$ is continous at $x = -1$

0.7
0.8
0.9