

2/10/18

I Down John  
Petroleum Engineering  
17/EN607/013  
EN6281

1.  $f(x) = \pi$   
 $\lim_{x \rightarrow 3} f(x)$

The limit does not exist

(2)  $f(x) = 5x - 21$   
 $x \rightarrow 6$

L.H.L

$\lim_{x \rightarrow 6^-} f(x)$

R.H.L

$x \rightarrow 6^+$

L.H.L		R.H.L	
$x \rightarrow 6^-$	$\lim$	$x \rightarrow 6^+$	$\lim$
5.9	8.5	6.1	9.5
5.91	8.55	6.09	9.45
5.92	8.6	6.08	9.4
5.93	8.65	6.07	9.35
5.94	8.7	6.06	9.3
5.95	8.75	6.05	9.25
5.96	8.8	6.04	9.2
5.97	8.85	6.03	9.15
5.98	8.9	6.02	9.1
5.99	8.95	6.01	9.05
6	9	6.01	9

Since the R.H.L and L.H.L are equal to 9, therefore

$\lim_{x \rightarrow 6} (5x - 21) = 9$

3. Find the limit of the model equation given as;

5

$$\lim_{x \rightarrow 3^+} \frac{3-x}{|3-x|}$$

$$\frac{3-3.1}{|3-3.1|} = \frac{-0.1}{|-0.1|} = \frac{-0.1}{0.1} = -1$$

(4) Evaluate the limit of the model given as  $\lim_{x \rightarrow 3} \frac{x-3}{|x-3|}$   
if it exists

for a limit to exist L.H.L = R.H.L

$$= \frac{3.1-3}{|3.1-3|} = \frac{0.1}{0.1} = 1$$

$$\text{L.H.L} = \frac{2.9-3}{|2.9-3|} = \frac{-0.1}{|-0.1|} = \frac{-0.1}{0.1} = -1$$

Since R.H.L  $\neq$  L.H.L the limit  $\lim_{x \rightarrow 3} \frac{x-3}{|x-3|}$  does not exist

5 Show that the function given in the equation below is continuous on the interval  $[4, 8)$

$$f(x) = \sqrt{x-4}$$

Solution

$$f(x) = \sqrt{x-4}$$

$$\lim_{x \rightarrow 4} f(x) = \sqrt{4-4} = 0$$

$$f(x) = \sqrt{x-4}$$

$$\lim_{x \rightarrow 5} f(x)$$

$$= \sqrt{5-4} = 1$$

$$f(x) = \sqrt{x-4}$$

$$\lim_{x \rightarrow 6} f(x) = \sqrt{6-4} = 1.4$$

$$f(x) = \sqrt{x-4}$$

$$\lim_{x \rightarrow 7} f(x) = \sqrt{7-4} = 1.7$$

$$f(x) = \sqrt{x-4}$$

$$\lim_{x \rightarrow 8} f(x) = \sqrt{8-4} = 2$$

$x$	$f(x) = \sqrt{x-4}$
4	0
5	1
6	1.4
7	1.7
8	2



# Continuity graph

