

Ejailonibu Oluwadamilola  
 171ENG031019  
 Civil engineering.

1. Find  $\lim_{x \rightarrow 3} f(x) = 0$

Solution  
 $\lim_{x \rightarrow 3} f(x) = 0$   
 $x \rightarrow 3$   
 $1 = \pi$

2. The model of a system has been developed by an engineer to be given in eq(11)  
 $f(x) = 5x - 21$ , given that  $\delta = 0.1$  and using a step of 0.01, demonstrate in a table form that the limit of the model as  $x \rightarrow 6$  is equal to 9.

soln

$f(x)$	$6 - \delta$	$6 + \delta$	$f(x)$
8.50	5.90	6.10	9.50
8.55	5.91	6.09	9.45
8.60	5.92	6.08	9.40
8.65	5.93	6.07	9.35
8.70	5.94	6.06	9.30
8.75	5.95	6.05	9.25
8.80	5.96	6.04	9.20
8.85	5.97	6.03	9.15
8.90	5.98	6.02	9.10
8.95	5.99	6.01	9.05
9.00	6.00	6.00	9.00

R.H.C & L.H.C are equal  $\lim_{x \rightarrow 6} (5x - 21) = 9$

3. Find the limit of the model given in equation

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

solution

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

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

$$= \lim_{x \rightarrow 3^+} \frac{-x}{|x|} = \frac{-x}{x} = -1$$

4. Evaluate the limit of the model given in the equation below, if it exists  $\lim_{x \rightarrow 3} \frac{x-3}{|x-3|}$

soln

$$\lim_{x \rightarrow 3} \frac{x-3}{|x-3|} = \frac{3-3}{|3-3|} = \frac{0}{0} \text{ (undefined)}$$

The limit does not exist.

x	f(x) = $\sqrt{x-4}$
4	0
5	1.0
6	1.4
7	1.7
8	2.0

The graph below shows that  $f(x) = \sqrt{x-4}$  at interval (4, 8) is continuous because there is no point where the function is

defined and the becomes a straight line graph

