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DEPT. : MECHANICALS ENGINEERING

MATRIX NO: 17/EUG/CE/005

COURSE CODE: ENGG 231

1) $f(x) = \pi$

find the $\lim_{x \rightarrow 3} f(x)$

Solution

The limit does not exist.

2) $f(x) = 5x - 21$

$h = 0.1$ and step = 0.01 , $a = 6$

L.H.S		RHS	
$a - h$	$f(x)$	$a + h$	$f(x)$
5.9	8.50	6.10	9.50
5.91	8.55	6.09	9.45
5.92	8.60	6.08	9.40
5.93	8.65	6.07	9.35
5.94	8.70	6.06	9.30
5.95	8.75	6.05	9.25
5.96	8.80	6.04	9.20
5.97	8.85	6.03	9.15
5.98	8.90	6.02	9.10
5.99	8.95	6.01	9.05
6	9	6.00	9.00

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

RHS from $(x \rightarrow 3^+)$

$x = 3 + 0.1$

$x = 3.1$

$$\therefore \lim_{x \rightarrow 3^+} \frac{3-3.1}{|3-3.1|} = \frac{-0.1}{|-0.1|} = \frac{-0.1}{0.1} = 1$$

$$\uparrow \lim_{x \rightarrow 3} \frac{x-3}{|x-3|}$$

Solution

L.H.S.

$$x = 3 - 0.1$$

$$x = 2.9$$

R.H.S.

$$x = 3 + 0.1$$

$$x = 3.1$$

R.H.S

$$\lim_{x \rightarrow 3^+} \frac{3.1-3}{|3.1-3|} = \frac{0.1}{0.1} = 1$$

L.H.S

$$\lim_{x \rightarrow 3^-} \frac{2.9-3}{|2.9-3|} = \frac{-0.1}{|-0.1|} = -1$$

\therefore The limit does not exist since L.H.S \neq R.H.S.

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

For continuity $[4, 8] \Rightarrow 4, 5, 6, 7, 8$

If

$$x = 4$$

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

$$f(x) = 0$$

$$x = 5$$

$$f(x) = \sqrt{5-4}$$

$$f(x) = 1$$

$$x = 6$$

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

$$f(x) = 1.4$$

$$x = 7$$

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

$$f(x) = 1.7$$

$$x = 8$$

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

$$f(x) = 2$$

Continuity graph

Scale: y axis : 2cm = 1 unit

x axis : 1cm = 1 unit

