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Petroleum Engineering
14/Eng07/008
Eng 281

① $f(x) = \uparrow$

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

Ans; the lim does not exist.

② $f(x) = 5x - 21$
$\delta = 0.1$ and step $= 0.01$, $a = b$

L.H.S			R.H.S	
$a-\delta$	$f(x)$		$a+\delta$	$f(x)$
5.9	8.5		6.1	9.5
5.91	8.53		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	8.78		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	⟷	6.00	9

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

RHS from $(x \to 3^+)$
$x = 3 + 0.1$
$= 3.1$

$\therefore \lim_{x \to 3^+} \frac{3-3\cdot1}{|3-3\cdot1|}$

$= \frac{-0\cdot1}{|-0\cdot1|}$

$= \frac{-0\cdot1}{0\cdot1}$

$= -1$

(4) $\lim_{x \to 3} \frac{3-x}{|x-3|}$

~~L.H.3~~

~~$x = 0\cdot1 - 3$~~

~~$= x$~~

L.H.3

$x = 3 - 0\cdot1$

$= 2\cdot9$

R.H.3

$x = 3 + 0\cdot1$

$= 3\cdot1$

$\therefore$ R.H.3

$\lim_{x \to 3^+} \frac{3\cdot1-3}{|3\cdot1-3|} = \frac{0\cdot1}{0\cdot1} = 1$

L.H.3

$\lim_{x \to 3^-} \frac{2\cdot9-3}{|2\cdot9-3|} = \frac{-0\cdot1}{|-0\cdot1|} = -1$

i. The limit does not exist since LHS $\neq$ RHS

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

~~$x = 4$~~ For Continuity $[4, 8] \Rightarrow 4, 5, 6, 7, 8$

If

$x = 4$

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

$= 0$

$x = 5$

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

$= 1$

$x = 6$

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

$= 1.4$

$x = 7$

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

$= 1.7$

$x = 8$

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

$= 2$

Coatinuity graph.

Scale: Y 1 2cm to 1unit

x 1 1cm to 1unit