EZEOBISI CLEMENTINA ONYINYECHUKWU
17/ENG04/027 ENG281

(1) $f(x) = \pi$

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

sol

$\lim_{x \to 3} f(x) = 0$

The limit does not exist because $\lim_{x \to 3} f(x) = 0$

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

$\delta = 0.1$, and using a step of 0.01

i.e. $\delta = 0.1$, $\delta = 0.01$

$a+\delta$	left-hand side $f(x)$	$a-\delta$	R.H.S $f(x)$
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	9

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

sol

$\lim_{x \to 3^+} \frac{3-x}{|3-x|} = \lim_{x \to 3^+} \frac{3-3+\delta}{|3-3+\delta|} = \frac{-\delta}{+\delta} = -1$ //

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

sol

To check if the above exist find $\lim \frac{x-3}{|x-3|}$ taking limit of $x \to 3^+$ and $x \to 3^-$ respectively

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

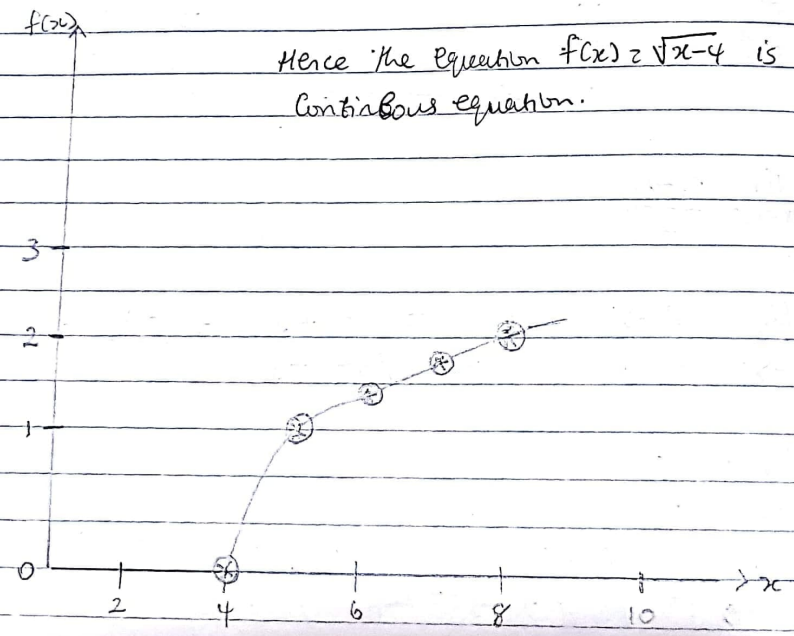
$\lim_{x \to 3^-} \frac{x-3}{|x-3|} = \lim_{x \to 3^-} \frac{2.9-3}{|2.9-3|} = \frac{-0.1}{|-0.1|} = \frac{-0.1}{0.1} = -1$ //

Hence $\lim_{x \to 3} \frac{x-3}{|x-3|} = 0$

The limit does not exist

(5) interval $[4, 8]$, $f(x) = \sqrt{x-4}$

x	$f(x) = \sqrt{x-4}$
4	0
5	1
6	$\sqrt{2}$ OR 1.41
7	$\sqrt{3}$ OR 1.73
8	2



Hence the equation $f(x) = \sqrt{x-4}$ is a continuous equation.