CHINWENDU CHIBUOKEM
17/ENG02/016
Comp Engineering
Engineering maths

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

There is no x in the function

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

$= \pi$ //

2)

$f(x)$	$x = 5$	$x - 6$	$x + 5$	$f(x)$
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

Since the Limits of the function are defined ~~and~~ equ

R.H.S and are both equal.

We can conclude that the limit of the function

$3 - x$

8.95	5.99		[illegible]	[illegible]
9.00	6.00		6.00	9.00

Since the Limits of the function are defined ~~and~~ equ on the L.H.S o
R.H.S and are both equal.

We can conclude that the limit of the function is real and exis

b) $\lim_{x \to 3^+} \dfrac{3 - x}{|3 - x|}$

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

$= \dfrac{3 - 3 - h}{|3 - 3 - h|}$

$= \dfrac{-h}{h}$

~~Ans~~ $= -1$

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

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

This function is undefined

Substitute $(3+\delta)$ and $(3-\delta)$ for x

$$\lim_{x \to 3^+} \frac{x-3}{|x-3|} = \frac{(3+\delta)-3}{|(3+\delta-3|} = \frac{\delta}{|\delta|} = 1, \quad R.H.S$$

$$L.H.S = \frac{(3-\delta)-3}{|(3-\delta)-3|} = \frac{-\delta}{\delta} = -1$$

∴ Since the R.H.S and L.H.S of the limit are not equal, the function 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 continuos, because there is no point where the function is defined and the graph becomes a straight line graph

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$\lim_{x \to 3^+} \frac{x-3}{|x-3|} = \frac{(3+\delta)-3}{|(3+\delta-3|} = \frac{\delta}{|\delta|} = 1$ R.H.S

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5

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

The graph below shows that $f(x) = \sqrt{x-4}$ at Interval (4, 8) is continuos, because there is no point where the function is defined and the graph becomes a straight line graph