2) The model of a system has been developed by an Eng

$f(x) = 5x - 21$

Given that δ (small increment) $= 0.1$

and using step of 0.01 demonstrate the limit of model as $x \to 6$ is equal to 9

for $x^+ = 6 + 0.1 = 6.1$ for $x^- = 6 - 0.1 = 5.9$

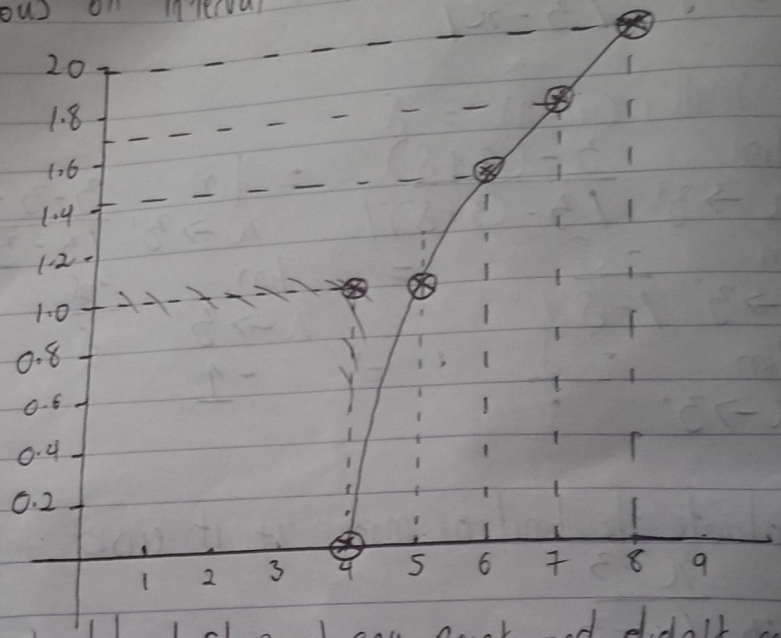
x^-	$f(x^-)(5x - 21$	x	x^+	$f(x^+)(5x - 21$
5.90	8.50		6.10	9.50
5.91	8.55		6.09	9.45
5.92	8.60		6.08	9.40
5.93	8.65		6.07	9.35
5.94	8.70		6.06	9.30
5.95	8.75		6.05	9.25
5.96	8.80		6.04	9.20
5.97	8.85		6.03	9.15
5.98	8.90		6.02	9.10
5.99	8.95		6.01	9.05
6.00	9.00		6.00	9.00

Since the limits on x^+ and x^- are both real and are both approaching 9.00 the limit of $f(x) = 5x - 21$ as $x \to 6$ is equal to 9

The limit as x tends to 3 doesn't exist

5) Show that the function given
$f(x) = \sqrt{x-4}$
is continous on interval $(4,8)$

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



Since the graph did not stop at any point and didn't require my hand to be raised up when drawing. It is a continous gra

7) Given a function to be
$f(x) = \pi$ find the limit as x approaches 3

$$\lim_{x \to 3} \pi = \pi = 3.142$$

The limit is π because it is a constant and contains no variable

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Engineering Mathematics I
Eng 2(B)
17/ENG04/041

3) find the limit of model equation

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

) let small increment : δ

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

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

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

4) Evaluate the limit of model if it exists

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

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

$\lim_{x \to 3}$ 0/0 : ~~undefi~~ undefined

∴ Since it's undefined We'll do for 3^+ and 3^-

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

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

for 3^-

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

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

Since $\lim_{x \to 3^+} f(x)$ and $\lim_{x \to 3^-} f(x)$ are not equal