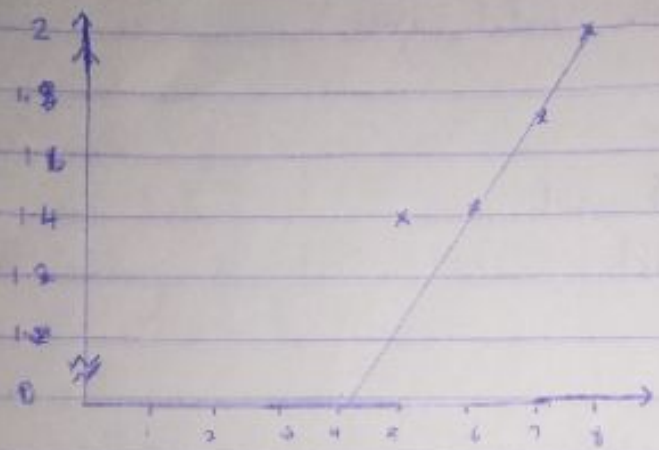


x	y
4	0
5	1.4
6	1.41
7	1.73
8	2



According to the graph the function ~~is~~ is continuous

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D/ENG 03/046

CIVIL ENGINEERING

1) Given a function, $P(x) = \pi$, find $\lim_{x \rightarrow 2} P(x)$

ans

There is no way to substitute x , because $P(x)$ is undefined

2) The model of a system has been developed by an engineer to be as given $P(x) = 5x - 21$. Given $P = 9$ and using step 1, demonstrate in tabular form, that the limit of the model as $x \rightarrow 6$ is equal to 9

P_x	$x - \delta$	x	$x + \delta$	$P(x)$
8.05	5.9	6	6.1	9.45
8.55	5.11	6	6.01	9.45
8.60	5.92	6	6.08	9.45
8.65	5.93	6	6.07	9.35
8.70	5.94	6	6.06	9.30
8.75	5.95	6	6.05	9.25
8.80	5.96	6	6.04	9.20
8.85	5.97	6	6.03	9.15
8.90	5.98	6	6.02	9.10
8.95	5.99	6	6.01	9.05
9	6.0	6	6.00	9.00

The limit is defined on both the LHS and RHS so it exists

3. Find the limit of the model given in Equation (4) if it exists. $\lim_{x \rightarrow 3} P(x)$

2ⁿ

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

4) Evaluate the limit of the rational given

$$\begin{aligned} \lim_{x \rightarrow 3^+} &= \frac{x-3}{|x-3|} \\ &= \frac{3+\delta-3}{|3+\delta-3|} = \frac{\delta}{|\delta|} = 1 \end{aligned}$$

$$\begin{aligned} \lim_{x \rightarrow 3^-} &= \frac{x-3}{|x-3|} \\ &= \frac{3-\delta-3}{|3-\delta-3|} = \frac{-\delta}{\delta} = -1 \end{aligned}$$

$$\begin{aligned} \lim_{x \rightarrow 3} &= \frac{x-3}{|x-3|} = \frac{3-3}{|3-3|} \\ &= \frac{0}{0} \end{aligned}$$

= undefined

5) Show that the function given in equation $F(x) = \sqrt{x-4}$ is continuous on the interval $(4, 7)$

$$S_1: F - F(x) = \sqrt{x-4}$$

$$S_2: \text{Sub } 4; \sqrt{4-4} = 0$$

$$S_3: \text{Sub } 7; \sqrt{7-4} = \sqrt{3} = 2$$