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 Course Code: - ENG 281

Assignment

1) Given a function to be as in $f(x) = \pi$,
 find $\lim_{x \rightarrow 3} f(x)$

Soln

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

2) The model of a system has been developed by an engineer to be as given in the equation;

$$f(x) = 5x - 2 \quad \& \quad f(x) = 5x - 2$$

Given that $\delta = 0.1$, & using a step of 0.01, demonstrate in tabular form of the model as $x \rightarrow 6$ is equal to a .

Soln

Lm	$a - \delta$	a	$a + \delta$	Lm
8.5	5.90		6.1	9.5
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 right hand limit & left hand limit are equal to a, therefore;

$$\lim_{n \rightarrow 6} (5n - 21) = a$$

3. find the limit of the model given as;

$$\lim_{n \rightarrow 3^+} \frac{3-n}{|3-n|}$$

Soln_n

$$\lim_{n \rightarrow 3^+} \frac{3-n}{|3-n|}$$

$$= \lim_{\delta \rightarrow 0} \frac{3-(3+\delta)}{|3-(3+\delta)|}$$

$$= \frac{3-3-\delta}{|3-3-\delta|}$$

$$= \frac{-\delta}{|-\delta|}$$

4. Evaluate the limit of the model given as $\lim_{n \rightarrow 3} \frac{n-3}{|n-3|}$

Soln_n

$$\lim_{n \rightarrow 3} \frac{n-3}{|n-3|}$$

$$= \frac{3-3}{|3-3|}$$

$$= \frac{0}{0}$$

$$= \frac{0}{0}$$

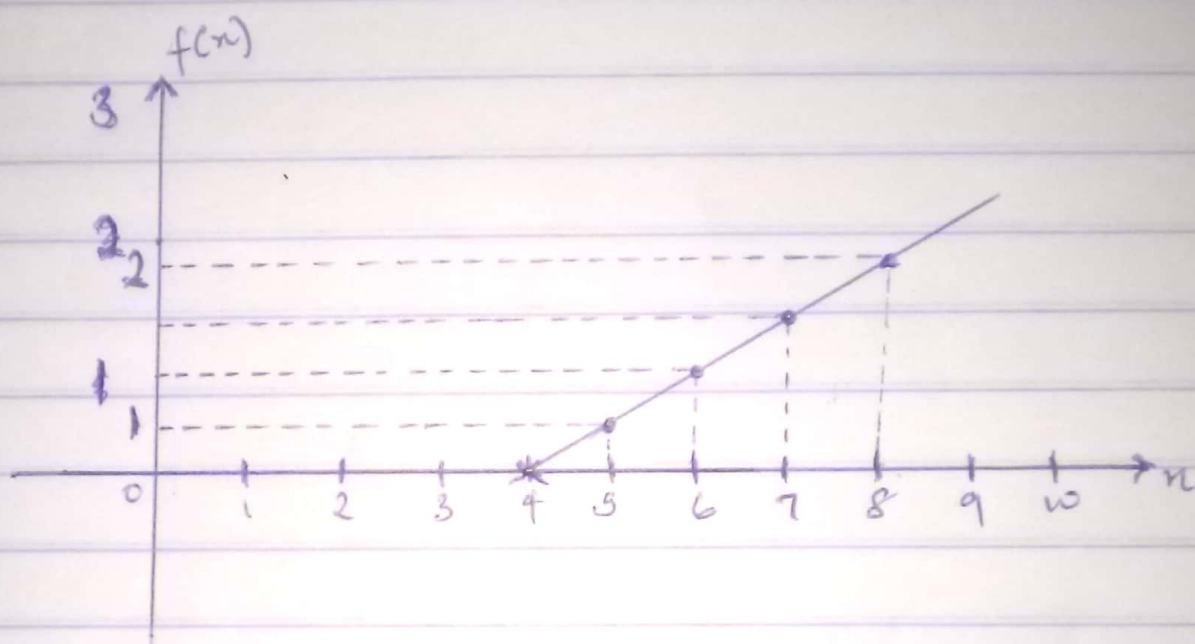
= undefined.

The limit does not exist.

5. Show that the function given in the equation below is continuous on the interval $[4, 5]$.

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

x	$f(x) = \sqrt{x-4}$
4	0
5	1
6	1.4
7	1.7
8	2.0



The graph above shows that the function $f(x) = \sqrt{x-4}$ at interval $[4, 8]$ is continuous because there was no point where the function was undefined.