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ENG 281 (ENGINEERING MATHEMATICS)

1. Given a function to be as a Equation (1)

$f(x) = x$ find $\lim f(x)$

$$x \to 3$$

$$\lim = x$$

$$\lim x \to x$$

2. The model of a system has been developed by an Engineer to be as given in Equation (2)

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

Given that $\delta = 0.1$ and using a step of 0.01 demostrate in tabular form that limit of the model as $x \to 6$ is equal to 9

f(x)	9-0	9+0	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 right hand limit (RHL) and left hand limit (LHL) are equal to 9, therefore

$$\lim_{x \to 6} (5x - 21) = 9$$

3. Find the limit of the model given as

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

Soln

$$\lim_{x \to 3^+} \frac{3-x}{|3-x|} = \lim_{x \to 0} \frac{3-(3+x)}{|3-(3+x)|} = \frac{-x}{x} \cdot 1$$

4) Evaluate the limit of the model given as

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

Soln

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

  * Undefined

The limit does not exist.

5. Show that the function given in the equation below is continuous on the interval f(x). $\sqrt{(x-4)}$

x	$f(x) = \sqrt{x-4}$
4	0
5	1.0
6	1.4
7	1.7
8	2.0

The graph above shows that the f(x)
$\sqrt{x-4}$) at interval (4,8) is continous, because
there was no point where the function was
Undefined and the graph is a straight
Line graph.