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1- Given a function to be as in equation 1.

$f(x) = \bar{\pi}$, find $\lim_{x \to 3} f(x)$.

Solution

$f(x) = \bar{\pi}$

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

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 demonstrate, in tabular form, that the limit of the model as $x \to 6$ is equal to 9

$f(x)$	$x - \delta$	$x + \delta$	$f(x)$
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

The left hand limit and right hand left are approaching 9. Therefore

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

3. Find the limit of the model equation given in Equation 3

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

Sln:

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

$$= \frac{3-(3+x)}{|3-(3+x)|} = \frac{-x}{x} = -1$$

4. Evulate the limit of the model given in Equation (4) if it exist.

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

$$RHL = \frac{(3+x)-3}{|(3+x)-3} = \frac{x}{x} = 1$$

$$LHL = \frac{(3-x)-3}{|(3-x)-3} = \frac{-x}{x} = -1$$

Since the RHL $\neq$ LHL

∴ It does not exist

5. Show that the function given in Equation 5 . $f(x) = \sqrt{x-4}$ is Continuous on the interval $[4, 8]$

x	4	5	6	7	8
$f(x)$	0	1	1.4	1.7	2