

YUSUF AHMAD

17/ENG02/081

COMPUTER ENGINEERING

$$1) \lim_{x \rightarrow 3} f(x)$$

$$f(x) = \pi$$

$$\lim_{x \rightarrow 3} \pi = \pi$$

$$x \rightarrow 3$$

$$4) \lim_{x \rightarrow 3} \frac{x-3}{|x-5|} \quad x \geq 0$$

$$\lim_{x \rightarrow 0^+} \left[ \frac{(3+h)-3}{|3+h-3|} \right]_{x \rightarrow 20} \quad \left[ \frac{3-h-3}{3h-3} \right]_{x \rightarrow 25}$$

$$\frac{3-3}{3-3} = \frac{0}{0} = \text{Intermediate}$$

Hence, limits doesn't exist from both left and right hand limit.

$$2) \lim_{x \rightarrow 6} f(x)$$

$$x \rightarrow 6$$

$$\lim_{x \rightarrow 6} (5x - 21)$$

$$x \rightarrow 6$$

$x$	$f(x)$
6.1	9.5
6.01	9.05
6.001	9.005
6.0001	9.0005
6.00001	9.00005
6.000001	9.000005
6.0000001	9.0000005

5) At point  $x = 4$

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

$$\lim_{x \rightarrow 4} \sqrt{x-4} = \sqrt{4-4} = \sqrt{0} = 0$$

$$\lim_{x \rightarrow 8} \sqrt{x-4} = \sqrt{8-4}$$

$$x \rightarrow 8$$

$$= \sqrt{4} = 2$$

Hence,  $f(x) = \sqrt{x-4}$  as  $x$  tends towards 4

Hence  $P(x) = 5x - 21$  as  $x$  tends towards 6

$$x \rightarrow 6$$

$$\lim_{x \rightarrow 4} f(x) = f(4, 8)$$

$$x \rightarrow (4, 8)$$

$$3) \lim_{x \rightarrow 3} \frac{3-x}{|3-x|}$$

$$x \rightarrow 3$$

$$\lim_{x \rightarrow 3} \left( \frac{3-(3+x)}{3-(3+x)} \right) = \frac{0}{0}$$

Limit is intermediate at right

hand limit.

Hence,  $f(x)$  is contains at

$$(4, 8)$$