BRIGGS FRANCIS
17/ENG04/1015
MAT 281

1 $f(x) = \pi$, find $\lim_{x \to 2} f(x)$

$\lim_{x \to 2^-} f(x) = \pi$ $\lim_{x \to 2^+} f(x) = \pi$

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

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

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

from the table $\lim_{x \to 6} (5x - 21)$ all tends toward 9

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

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

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

$= \frac{-\delta}{\delta} = -1$

4 Evaluate the limit of the model equation (4) if it exists

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

$$\lim_{x \to 3^+} \text{Let } \frac{x-3}{|x-3|} = \frac{3+\delta-3}{|3+\delta-3|} \quad \lim_{x \to 3^+} = \frac{\delta}{|\delta|} = 1$$

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

$\lim_{x \to 3} \frac{x-3}{|x-3|}$ = This is non-existent since $\lim_{x \to 3^+} \neq \lim_{x \to 3^-}$

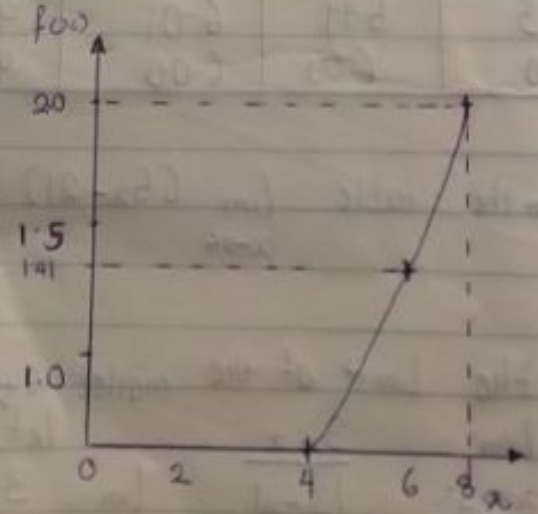
5 Show that the function given in equation $f(x) = \sqrt{x-4}$ is continuous on the interval (4, 8)

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

sub 4 for x $\quad f(4) = \sqrt{(4)-4} = \sqrt{0} = 0$

sub 8 for x $\quad f(8) = \sqrt{(8)-4} = \sqrt{4} = 2$

x	f(x)
4	0
6	1.41
8	2



It is continuous