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COURSE: ENE 281, 200L
MAT NO: 18/ENG04/013
DEPT: ELECT/ELECT

ENE 281

~~Show~~ show that the limit $x \to 0$ is $\frac{a}{b}$

$$f(x) = \frac{\sin ax}{bx}$$

putting $x \to 0$

$$\frac{\sin a(0)}{b(0)} = \text{indeterminate}$$

hence applying L'hopital's

$$\frac{\sin ax}{bx} = \frac{a \cos ax}{b}$$

$\therefore$ putting $x = 0$

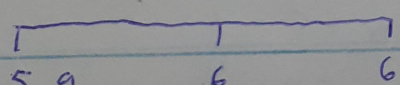
$$\frac{a \cos 0}{b} = \frac{a \times 1}{b} = a/b$$

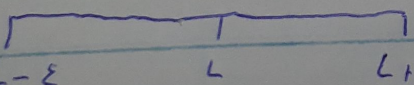
$\therefore$ hence $x \to 0$ of $fx = a/b$,,

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

$\delta = 0.1$, $\Delta\delta = 0.01$

$x \to 6$





$L-\varepsilon$	$a-\gamma$	a	$a+\gamma$	$L+\varepsilon$
8.5	5.9	6	6.1	9.5
8.55	5.91		6.09	9.45
8.6	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		6.09	9.00

c) $[-5,5]$

$f(x) = (25-x^2)^{1/2}$

at -5

$(25-(-5)^2)^{1/2}$

$(25-25)^{1/2} = 0$

at -4

$(25-(-4)^2)^{1/2}$

$= (25-16)^{1/2} = 3$

at -3

$(25-(-3)^{2})^{1/2} = 4$

at -2

$(25-(-2)^2)^{1/2} = 4.58$

at $x=-1$

$(25-(-1)^2)^{1/2} = 4.9$

at $x=0$

$(25-0)^{1/2} = 5$

at $x=1$

$(25-(1)^2)^{1/2} = 4.9$

at $x=2$

$(25-(2)^2)^{1/2} = 4.58$

at $x=3$

$(25-(3)^2)^{1/2} = 4$

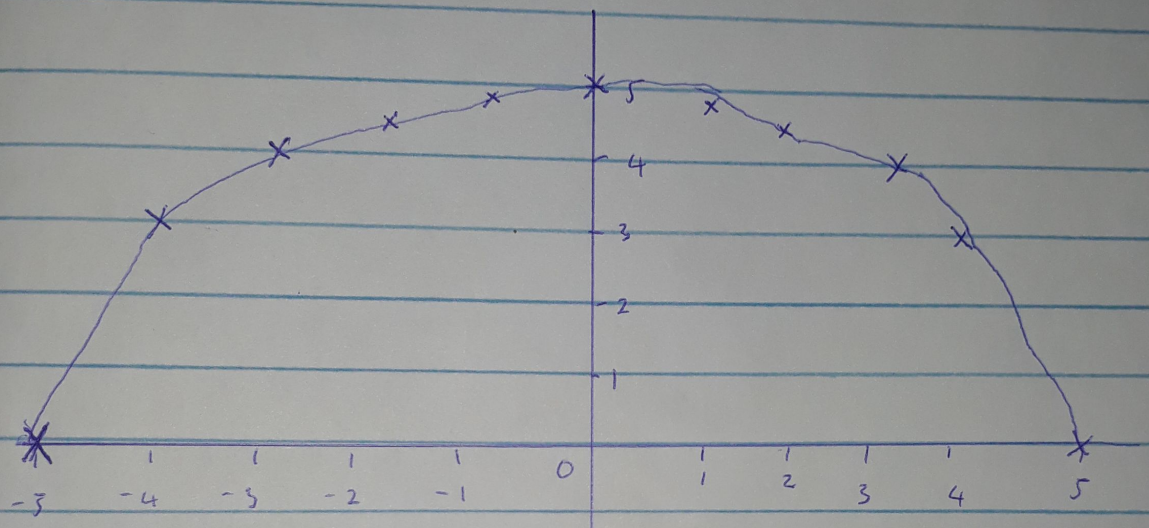
at $x=4$

$(25-4^2)^{1/2} = 3$

at $x=5$

$(25-(5)^2)^{1/2} = 0$

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
$f(x)$	0	3	4	4.5	4.75	4.9	4.5	4	3	0	



∴ hereby the $f(x)$ is continuous.