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

c $[-5, 5]$ $f(x) = (25 - x^2)^{1/2}$

at $x = -5$

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

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

at $x = -4$

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

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

At $x = -3$

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

$(25-9)^{1/2} = 4$

At $x = -1$

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

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

At $x = 0$

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

at $x = 5$

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

at $x = 4$

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

at $x = 3$

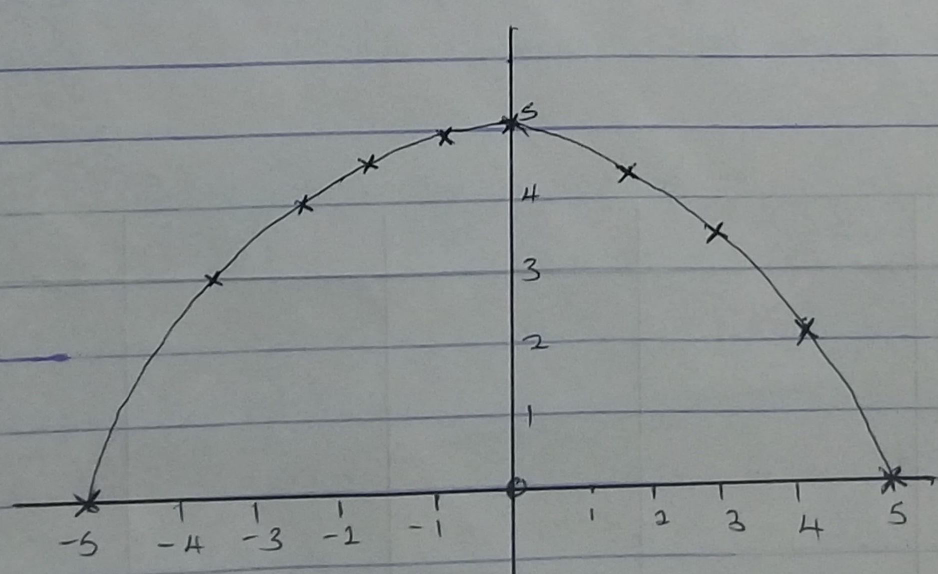
$(25-3^2)^{1/2} = 4$

at $x = 2$

$(25-2^2) = 4.58$

at $x = 1$

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



Hence, the eqn $f(x) = (25-x^2)^{1/2}$ is Continous

COURSE: ENG 281

1). Show that the limit of the function given in equation (1.1) as X approaches 0 is a/b

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

Solution

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

$$\lim_{x \to 0} = \frac{\sin ax}{bx}$$

$$f(x) = \frac{\sin a(0)}{b(0)} = \frac{0}{0} \quad \therefore \text{(undefined)}$$

Using l'hopital's rule

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

$$f(x) = \frac{a\cos ax}{b} = \frac{a\cos a(0)}{b} = \frac{a}{b}$$

2 The model of a System has been developed to be as given in equation (1.2). $F(x) = 5x - 21$. Given that $\delta = 0.1$ and $\Delta\delta = 0.01$, determine in a tabular form that the limit of the model as $x \to 6$ is equal to 9

Soln

$f(x) = 5x - 4$ $\delta = 0.1$, $\Delta\delta = 0.01$, $a = 6$

$L-e$	$a-\delta$	a	$a+\delta$	$L+e$
8.5	5.9	6	6.1	9.5
8.55	5.91		6.09	9.45
8.6	5.92		6.08	9.4
8.65	5.93		6.07	9.35
8.7	5.94		6.06	9.3
8.75	5.95		6.05	9.25