

2)

L.E	a.B	a	a+B	L+E	L-E
8.50	5.9	b	6.0	9.50	8.50
8.55	5.91		6.09	9.45	8.55
8.60	5.92		6.08	9.40	8.60
8.65	5.93		6.07	9.35	8.65
8.70	5.94		6.06	9.30	8.70
8.75	5.95		6.05	9.25	8.75
8.80	5.96		6.04	9.20	8.80
8.85	5.97		6.03	9.15	8.85
8.90	5.98		6.02	9.10	8.90
8.95	5.99		6.01	9.05	8.95
9.00	6.00		6.00	9.00	9.00

$$f(x) = \sqrt{25 - (-1)^2} \text{ at } -1 = 24$$

$$f(x) = f(0) = \sqrt{25 - (0)^2} = 25$$

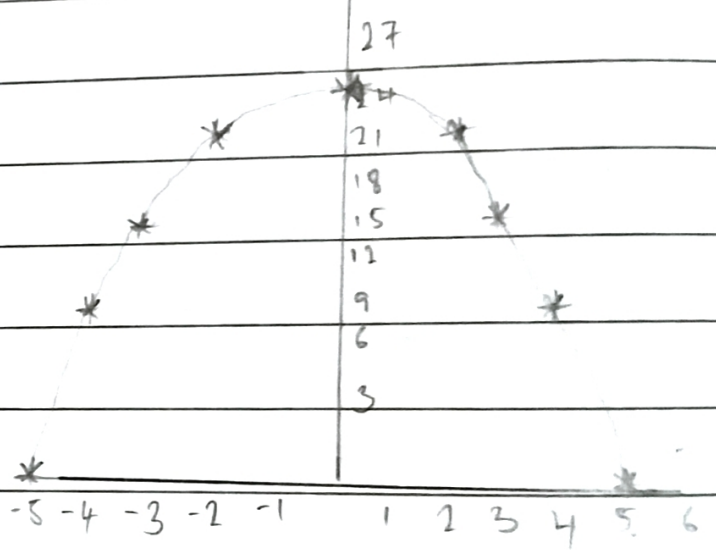
$$f(x) = \sqrt{25 - (1)^2} = 24$$

$$f(x) = f(2) = \sqrt{25 - (2)^2} = 21$$

$$f(x) = \sqrt{25 - (3)^2} \text{ at } 3 = 16$$

$$f(x) = f(4) = \sqrt{25 - (4)^2} = 9$$

$$f(x) = \sqrt{25 - (5)^2} \text{ at } 5 = 0$$



Question (c): Show whether the function given in equation (1.3) is continuous on the interval $[-5, 5]$

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

Soln

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

$$f(x) = \sqrt{25 - x^2}$$

$$f(x) = \sqrt{25 - (-5)^2} \text{ at } -5 = 0$$

$$f(x) = f(-4) = \sqrt{25 - (-4)^2} = 9$$

$$f(x) = \sqrt{25 - (-3)^2} \text{ at } -3 = 16$$

$$f(x) = f(-2) = \sqrt{25 - (-2)^2} = 21$$

A is continuous on the interval of $[-5, 5]$

BASHIR ARUBAKAR IDRS

18/ENGG01/011

CHEMICAL ENGINEERING

ENGG201

ASSIGNMENT

Question (1) Show that the limit of the function given in equation (1,1) as x approaches 0 is a/b , $f(x) = \frac{\sin ax}{bx}$

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

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

using L'hopital rule

$$\lim_{x \rightarrow 0} \frac{a \cos ax}{b}$$

$$\lim_{x \rightarrow 0} = \frac{a \cos a \cdot 0}{b} = \frac{a \cdot 1}{b} = \frac{a}{b}$$

$$\therefore \lim_{x \rightarrow 0} = a/b$$

2) The Model of a system has been developed to be given in equation (1,2)

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

Given that $\delta = 0.01$ and $\Delta S = 0.01$, demonstrate in tabular form, that the limit of the Model as $x \rightarrow 6$ is equal to 9.