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18/ENG-04/029

Elect-Elect

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

$\lim_{x \rightarrow 0} \frac{\sin ax}{bx}$

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

$= \frac{\sin 0}{0} = \frac{0}{0}$  indeterminate

Applying L'Hopital rule

$\lim_{x \rightarrow 0} \frac{\sin ax}{bx}$

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

$= \frac{a \cos 0}{b}$

$= \frac{a \cdot 1}{b}$

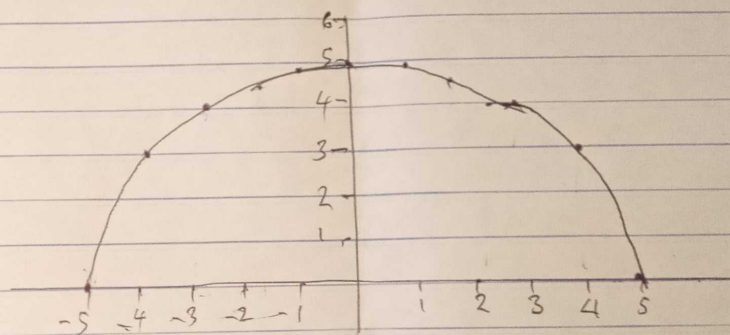
$= \frac{a}{b}$

$= \frac{a}{b}$

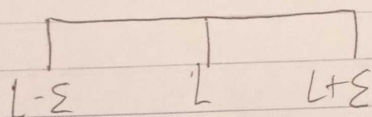
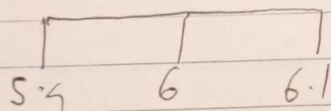
8.85	5.97	6.03	9.15
8.90	5.98	6.02	9.16
8.95	5.99	6.01	9.05
9.00	6.00	6.00	9.00

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

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
x <sup>2</sup>	25	16	9	4	1	0	1	4	9	16	25
25 - x <sup>2</sup>	0	9	16	21	24	25	24	21	16	9	0
(25 - x <sup>2</sup> ) <sup>1/2</sup>	0	3	4	4.58	4.90	5	4.90	4.58	4	3	0



b)  $\delta = 0.1, \Delta \delta = 0.01, f(x) = 5x - 21$



L - ε	a - δ	a	a + δ	L + ε
8.50	5.9	6	6.1	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