

Sub: _____

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Name: Nafinur Leo

Id: 20-42195-1

6.1

$$c) t_0 = 8$$

$$V(8,2) = \frac{26.42 - 12.67}{2 \times 2} = 3.5875$$

$$V(8,4) = \frac{36.40 - 7.38}{2 \times 4} = 3.6275$$

$$n = 2$$

$$n = \frac{4}{2} = 2$$

$$\begin{aligned} \therefore V_R(8) &= V(8,2) + \frac{V(8,2) - V(8,4)}{2^n - 1} \\ &= 3.5875 + \frac{3.5875 - 3.6275}{2^2 - 1} \end{aligned}$$

$$= 3.57416$$

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$$3b) t_0 = 2$$

$$A(2) = \frac{59.05 - 41.075 \times 2 + 26.335}{0.5^2}$$

$$= \frac{8.9875}{0.25} = 12.94$$

$$A(2, 2) = 12.94$$

$$A(2, 1) = \frac{1}{0.5^2} [59.05 - 2 \times 26.335 + 11.860]$$

$$= 18.24$$

$$n=1, r = \frac{1}{0.5} = 2$$

$$M_R(2) = 12.94 + \frac{12.94 - 18.24}{2^1 - 1}$$

$$= 7.64$$

$$c) t_0 = 1$$

$$A(1) = \frac{1}{0.5^2} [11.860 - 2 \times 26.335 + 41.075]$$

$$= 1.06$$

~~3. a)~~

$$A(1, 0.5) = \frac{1}{0.5^2} [11.860 - 2 \times 26.335 + 41.075]$$

$$= 1.06$$

$$A(1, 1) = \frac{1}{1^2} [0 - 2 \times 26.335 + 59.05]$$

$$= 6.38$$

$$n = 2, \quad p = \frac{1}{0.5} = 2$$

$$A_R(1) = 1.06 + \frac{1.06 - 6.38}{2^2 - 1}$$

$$= -0.713$$

Q.	x	1.2	1.4	1.6	1.8	2.0
	f(x)	3.728	4.124	4.525	5.123	5.626

a) Trapezoidal for composite and Richardson's extrapolation:-

$$I_T(0.2) = \frac{0.2}{2} [3.728 + 5.626 + 2(4.124 + 4.525 + 5.123)]$$

$$= 3.6898$$

$$I_T(0.4) = \frac{0.4}{2} [3.728 + 5.626 + 2(4.525)]$$

$$= 3.6808$$

$$n=2, \quad n = \frac{h_2}{h_1} = \frac{0.4}{0.2} = 2$$

$$I_T = 3.6898 + \frac{3.6898 - 3.6808}{2^2 - 1} = 3.6928$$

b) Simpson's $\frac{1}{3}$ for composite and Richardson's extrapolation:-

$$I_S(0.2) = \frac{0.2}{3} [3.728 + 5.626 + 4 \times 4.124 + 2 \times 4.525 + 4 \times 5.123] = 3.6928$$

$$I_S(0.4) = \frac{0.4}{3} [3.728 + 5.626 + 4 \times 4.525] = 3.6605$$

$$n=4, \quad n = \frac{h_2}{h_1} = \frac{0.4}{0.2} = 2$$

$$I_S = 3.6928 + \frac{3.6928 - 3.6605}{2^2 - 1} = 3.6949$$