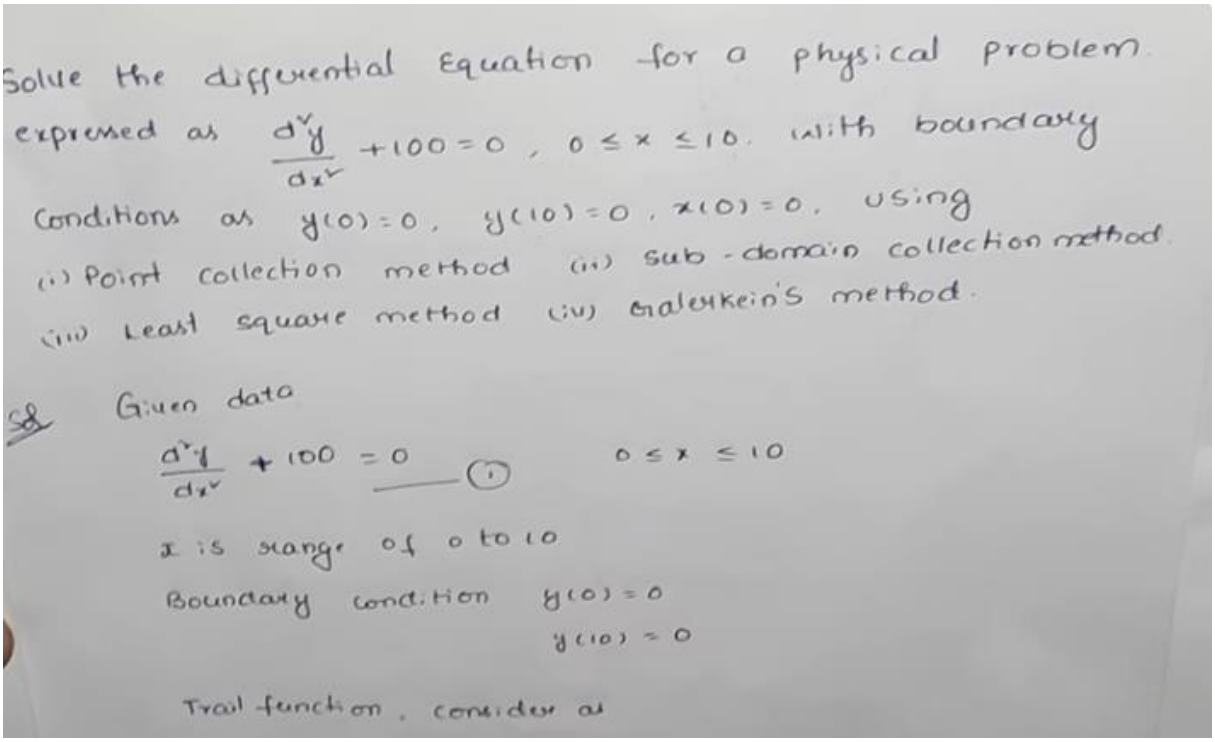
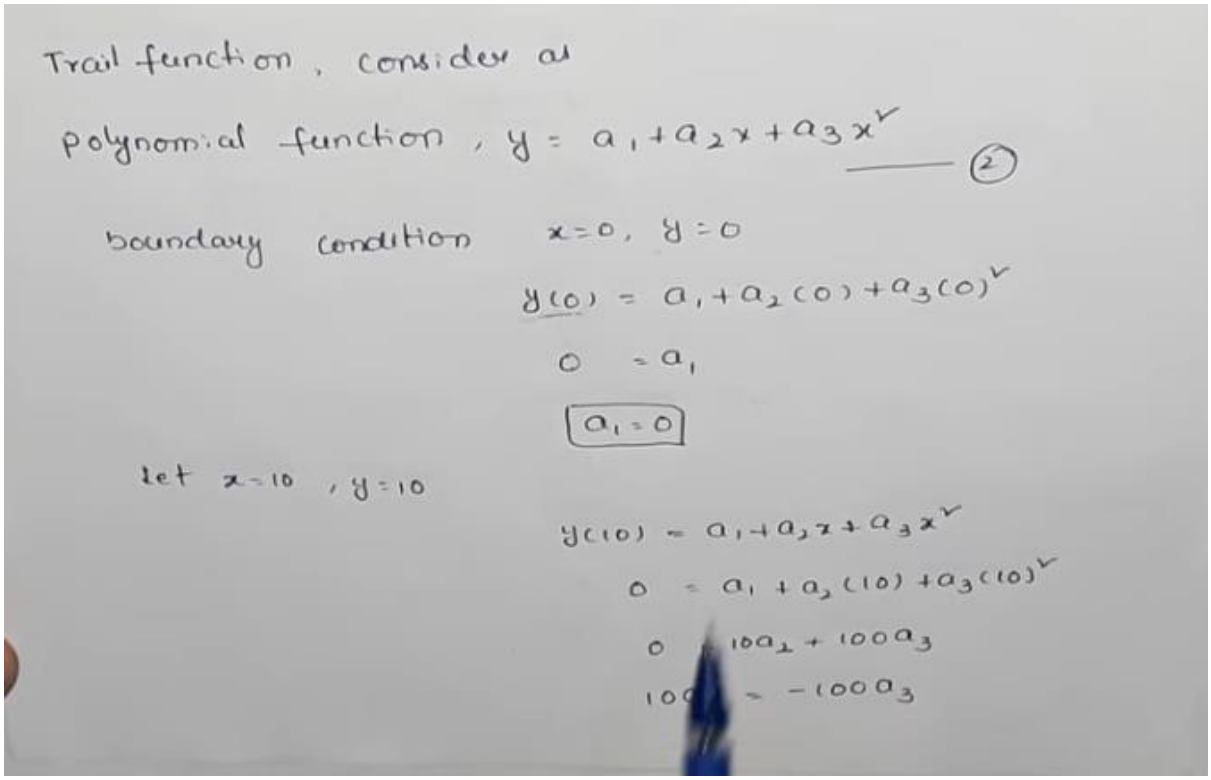
SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-641 035, TAMIL NADU

Weighted residual formulation





$\therefore a_1 = 0 \quad a_2 = -10a_3$

a_1, a_2 values are substituted in Eq (2)

$$y = a_1 + a_2 x + a_3 x^2$$

$$= 0 + (-10a_3)x + a_3 x^2$$

$$= -10a_3 x + a_3 x^2$$

$$= a_3 x [x - 10]$$

$$= ax(x-10) \qquad (\because a_3 = a)$$

Hence trail function $y = ax(x-10)$

Now, differentiate the above Equation w.r.t x

$$y = ax^2 - 10ax$$

$$\frac{dy}{dx} = a(2x) - 10a(1)$$

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$$\frac{dy}{dx} = a(2x) - 10a(1)$$

$$\frac{dy}{dx} = 2ax - 10a$$

again differentiate the above Equation w.r.t x.

$$\frac{d^2y}{dx^2} = 2a(1) - 10a(0)$$

$$\frac{d^2y}{dx^2} = 2a.$$

Substitute $\frac{d^2y}{dx^2}$ value in Eq (1) $\frac{d^2y}{dx^2} + 100$

$$R = 2a + 100$$