

DATE: _____

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Subject # Structure I

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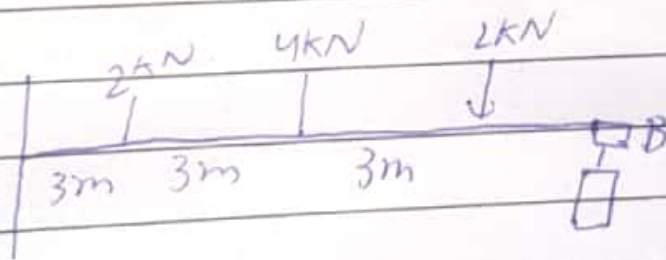
Assignment # 03

Question # 02

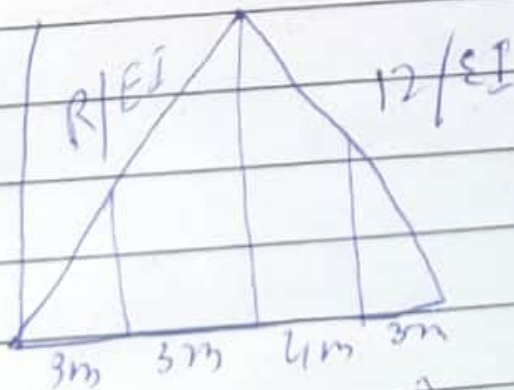
Determine the slope - - - - -

Take $E = 200 \text{ GPa}$, $I = 6 (10^6) \text{ mm}^4$

Solution i:-



Sol:-



$$\frac{QA}{C} = \frac{1}{2} \left(\frac{12}{EI} \right) (3) + \left(\frac{12}{EI} \right) (3)$$

$$+ \frac{1}{2} \left(\frac{6}{EI} \right) (3)$$

$$Q_{A/c} = \left(\frac{18}{EI} \right) + \left(\frac{36}{EI} \right) + \left(\frac{9}{EI} \right)$$

$$Q_{A/c} = \frac{63}{EI} = \frac{63}{(200 \times 10^6)}$$

$$\left(6 \times 10^6 \right) \left(1000 \right)^{-4}$$

$$Q_{A/c} = 0.0525 \text{ rad}$$

$$Q_A = 0.0525 \text{ rad hm}$$

$$\cancel{t_{A/c}} = \left[\frac{1}{2} \left(\frac{12}{EI} \right) + \left(\frac{9}{EI} \right) \right]$$

$$t_{A/c} = \left[\frac{1}{2} \left(\frac{12}{EI} \right) (3) \right]$$

$$+ \left[\frac{12}{EI} (3) \right] \left(\frac{2}{3} (3) \right)$$

$$+ \left[\frac{12}{EI} (3) \right] \left(3 + \frac{1}{2} (3) \right) +$$

$$\left[\frac{1}{2} \left(\frac{6}{EI} \right) (3) \right]$$

$$\left(3 + \frac{2}{3} (3) \right)$$

$$= 0.202 \text{ m}$$

So,

$$\Delta C = \frac{tA}{Ec} = 0.202 \text{ m}$$

$$= 202 \text{ mm} \quad \text{Ans}$$

