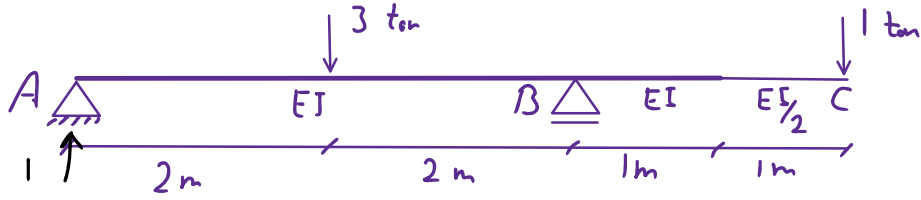


Deflection3

Thursday, November 9, 2023 9:59

$\delta_c = ?$: مثال



$$\delta_{A/B} = \frac{1}{2} \left(\frac{2}{EI} \right) (2) \left(\frac{4}{3} \right) + \frac{1}{2} \left(\frac{2}{EI} \right) (1) \left(\frac{2}{3} \right)$$

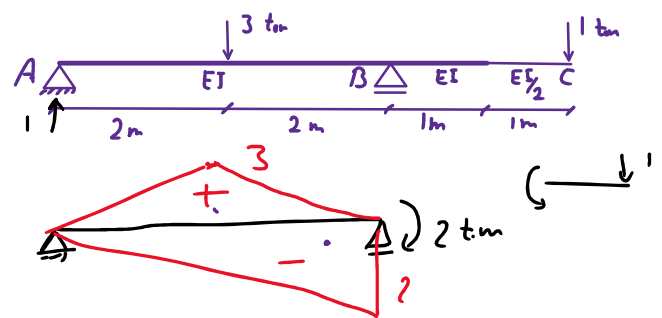
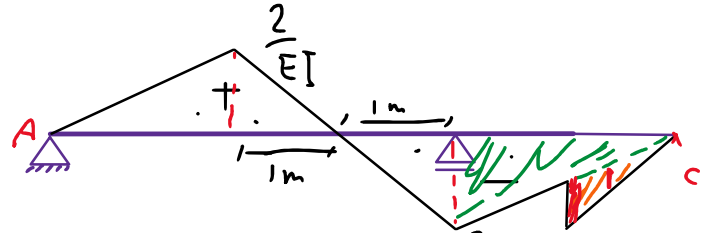
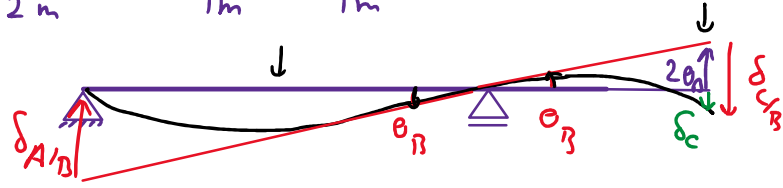
$$- \frac{1}{2} \left(\frac{2}{EI} \right) (1) \left(\frac{11}{3} \right) = \frac{4}{3EI}$$

$$\theta_B = \frac{4}{3EI} = \frac{1}{3EI}$$

$$\delta_c = 2\theta_B + \delta_{c/B} = 2 \left(\frac{1}{3EI} \right) + \frac{1}{2} \left(\frac{-2}{EI} \right) (2) \left(\frac{4}{3} \right) + \frac{1}{2} \left(\frac{-1}{EI} \right) (1) \left(\frac{2}{3} \right)$$

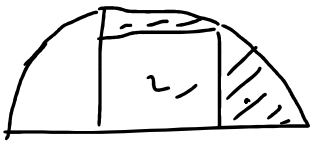
$$\frac{2}{3EI} - \frac{3}{EI}$$

$$\delta_c = \frac{-7}{3EI}$$

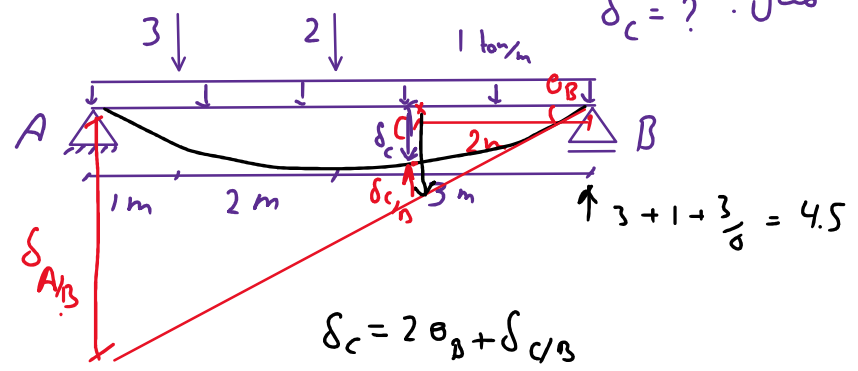


$$\delta_{A/B} = \frac{1}{2} \left(\frac{3}{EI} \right) (4) (2) + \frac{1}{2} \left(\frac{-2}{EI} \right) (4) \left(\frac{8}{3} \right)$$

$$= 12 + \left(-\frac{32}{3} \right) = \frac{36-32}{3} = \frac{4}{3EI}$$



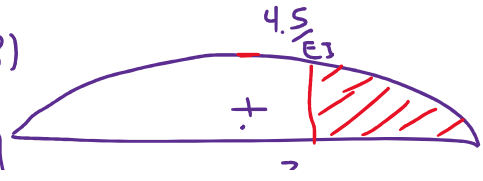
$\delta_c = ?$: مثال



$$\delta_c = 2\theta_B + \delta_{c/B}$$

$$\delta_{A/B} = \frac{2}{3} \left(\frac{4.5}{EI} \right) (6) (3) + \frac{1}{2} \left(\frac{3}{EI} \right) (6) (3)$$

$$+ \left[\frac{1}{2} (12.5) (1) (2) + \frac{1}{2} (12.5) (1) (8) \right]$$

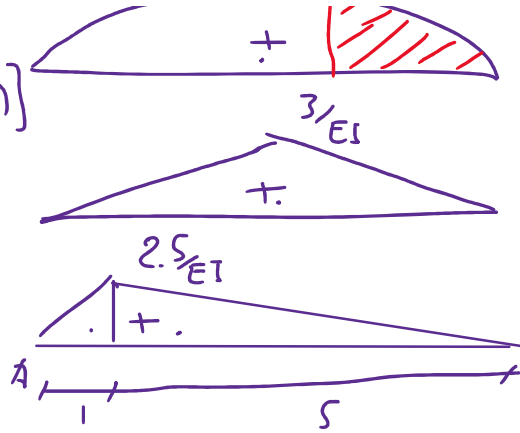


A/B $\frac{1}{EI}$ $\frac{1}{EI}$

$$+ \left[\frac{1}{2} \left(\frac{2.5}{EI} \right) (1) \left(\frac{2}{3} \right) + \frac{1}{2} \left(\frac{2.5}{EI} \right) (5) \left(\frac{8}{3} \right) \right]$$

$$\delta_{A/B} = \frac{98.5}{EI}$$

$$\theta_B = \frac{\delta_{A/B}}{6} = \frac{16.42}{EI}$$

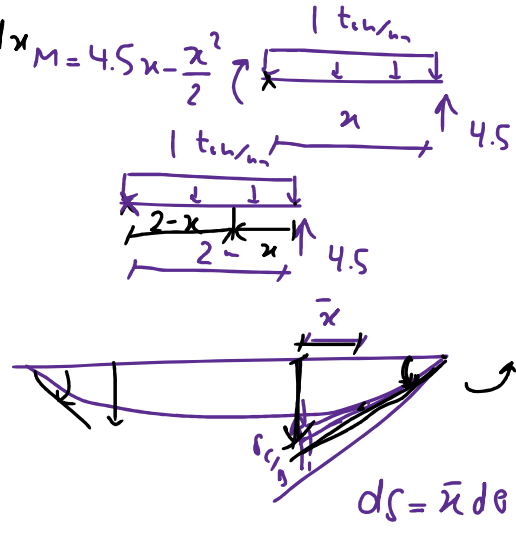


$$\delta_{C/B} = \int_0^2 \frac{M}{EI} \bar{x} dx = \frac{1}{EI} \int_0^2 (4.5x - \frac{x^2}{2})(2-x) dx$$

$$\int_0^2 (9x - 4.5x^2 - x^2 + \frac{x^3}{2}) dx =$$

$$\left[\frac{9}{2}x^2 - \frac{5.5}{3}x^3 + \frac{x^4}{8} \right]_0^2 = \frac{5.33}{EI}$$

$$\delta_c = -2 \left(\frac{16.42}{EI} \right) + \frac{5.33}{EI} = -\frac{11.08}{EI}$$



$$d\delta = \bar{x} d\theta = \bar{x} \left(\frac{M}{EI} dx \right)$$