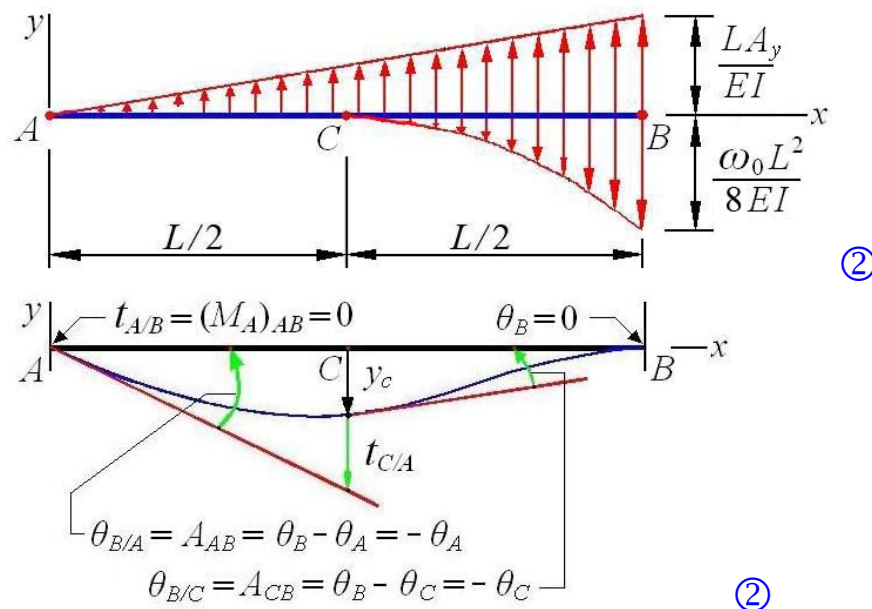
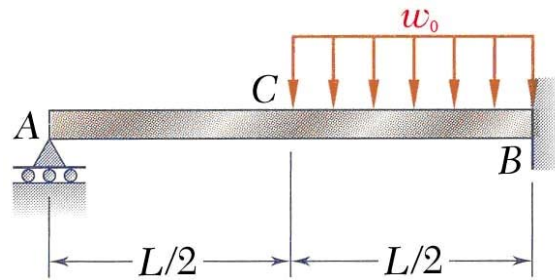


MEEG 3013 Quiz #9

A beam with constant flexural rigidity EI is supported and loaded as shown. Using **moment-area theorems**, determine for this beam (a) the reaction A_y at A, (b) the slope θ_A at A, (c) the slope θ_C at C, (d) the deflection y_C at C.



$$t_{A/B} = (M_A)_{AB} = \frac{2L}{3} \cdot \frac{L}{2} \cdot \frac{LA_y}{2} - \frac{7L}{8} \cdot \frac{L}{6} \cdot \frac{w_0 L^2}{8EI} = 0 \quad A_y = \frac{7w_0 L}{128} \quad \textcircled{1}$$

$$A_y = \frac{7w_0 L}{128} \uparrow \quad \textcircled{1}$$

$$\theta_A = -\frac{5w_0 L^3}{768EI} \quad \textcircled{1}$$

$$\theta_C = \frac{w_0 L^3}{3072EI} \quad \textcircled{1}$$

$$t_{C/A} = +\curvearrowright (M_C)_{AC} = \frac{7w_0 L^4}{6144EI} \quad \textcircled{1} \quad y_C = -\left(\frac{L}{2} \cdot |\theta_A| - t_{C/A}\right) \quad y_C = -\frac{13w_0 L^4}{6144EI} \quad \textcircled{1}$$