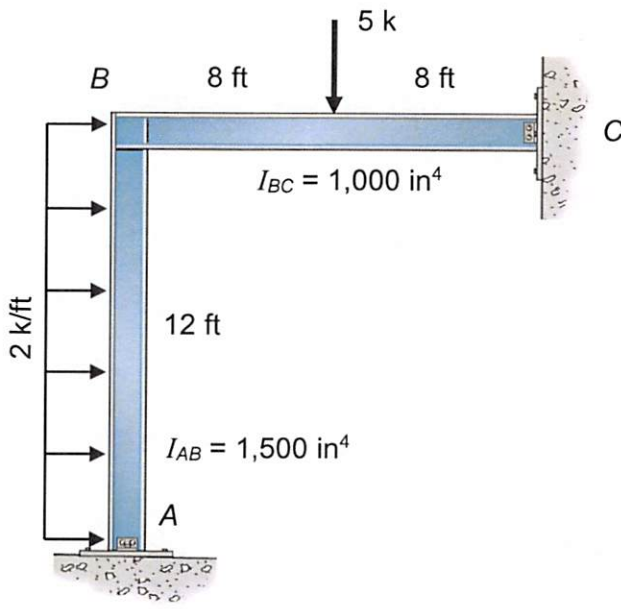


Determine the moments at the supports. Assume A is fixed, C is pinned, and E is constant.



$$FEM_{AB} = \pm \frac{WL^2}{12} = \frac{2k/ft (12ft)^2}{12} = \pm 24kft$$

$$FEM_{BC} = -\frac{3PL}{16} = \frac{3(5k)16ft}{16} = -15kft$$

$$I_{AB} = \frac{3}{2} I_{BC}$$

SECTION AB - 2 EQNS.

$$M_{AB} = \frac{2E(\frac{3}{2}I_{BC})}{12ft} [\theta_B] - 24kft \quad (1)$$

$$M_{BA} = \frac{2E(\frac{3}{2}I_{BC})}{12ft} [2\theta_B] + 24kft \quad (2)$$

SECTION BC - 1 EQN.

$$M_{BC} = \frac{3EI_{BC}}{16ft} [\theta_B] - 15kft \quad (3)$$

JOINT B

$$\sum M_B = 0$$

$$M_{BA} + M_{BC} = 0 \quad (4)$$

$$\begin{aligned} (4) \quad M_{BA} + M_{BC} = 0 &= \frac{2E(\frac{3}{2}I_{BC})}{12ft} [2\theta_B] + 24kft \\ &+ \frac{3EI_{BC}}{16ft} [\theta_B] - 15kft \end{aligned}$$

$$\Rightarrow \left[\frac{6}{12} + \frac{3}{16} \right] \theta_B = -9kft/EI_{BC} \quad \theta_B = \frac{-1,728kft^2}{132EI_{BC}}$$

$$M_{AB} = \frac{2E(\frac{3}{2}I_{BC})}{12} [\theta_B] - 24 \text{ kft} = \underline{-27.27 \text{ kft}}$$

$$M_{BA} = \frac{2E(\frac{3}{2}I_{BC})}{12} [2\theta_B] + 24 \text{ kft} = \underline{17.45 \text{ kft}}$$

$$M_{BC} = \frac{3EI_{BC}}{16 \text{ ft}} [\theta_B] - 15 \text{ kft} = \underline{-17.45 \text{ kft}}$$

$$M_{BA} + M_{BC} = 0$$