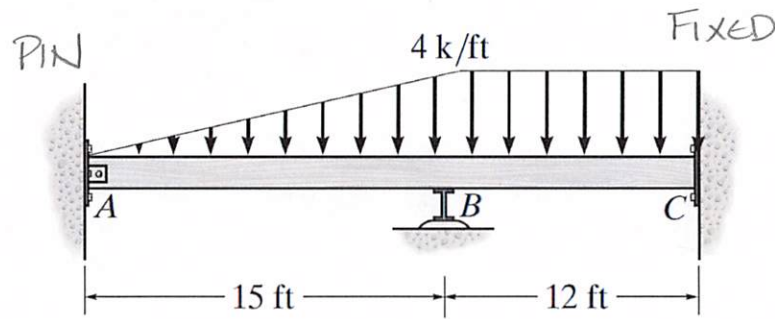
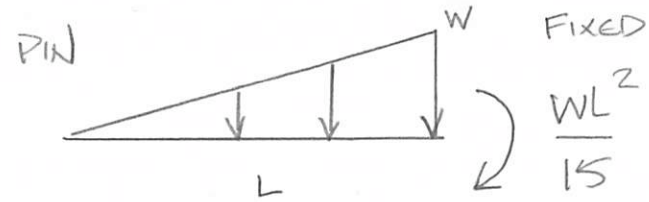


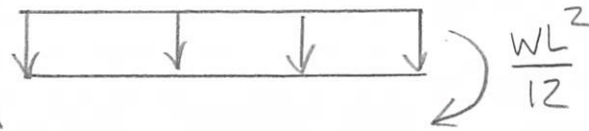
Problem 10a-2 – Determine the moment at B. Assume the support at A is pinned, B is a roller, C is fixed, and EI is constant.



FEM_{AB}



FEM_{BC} $\frac{WL^2}{12}$

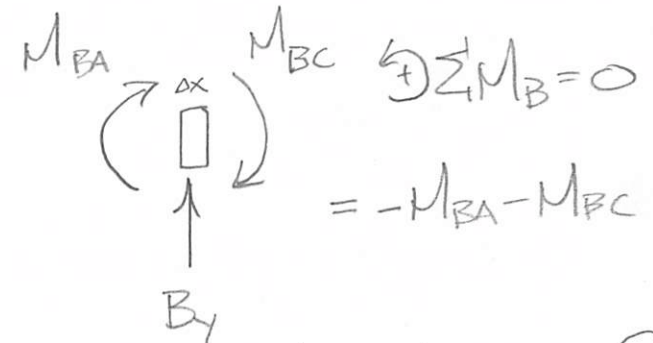


$$M_{BA} = \frac{3EI}{L_{AB}} \left[\theta_B - \frac{1}{4} \right] + \frac{4k/ft(15')^2}{15} \quad (1)$$

$$M_{BC} = \frac{2EI}{L_{BC}} \left[2\theta_B + \theta_C - \frac{3}{4} \right] - \frac{4k/ft(12')^2}{12} \quad (2)$$

$$M_{CB} = \frac{2EI}{L_{BC}} \left[2\theta_C + \theta_B - \frac{3}{4} \right] + \frac{4k/ft(12')^2}{12} \quad (3)$$

JOINT B



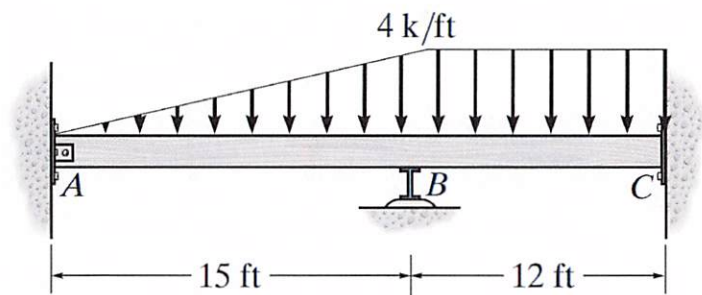
$$M_{BA} + M_{BC} = 0 \quad (4)$$

$$M_{BA} + M_{BC} = 0 = \left[\frac{3EI}{15'} \theta_B + 60kft \right] + \left[\frac{2EI}{12'} [2\theta_B] - 48kft \right]$$

$$\frac{8}{15} \theta_B = -\frac{12kft^2}{EI}$$

$$\Rightarrow \theta_B = -\frac{22.5kft^2}{EI}$$

Problem 10a-2 – Determine the moment at B . Assume the support at A is pinned, B is a roller, C is fixed, and EI is constant.

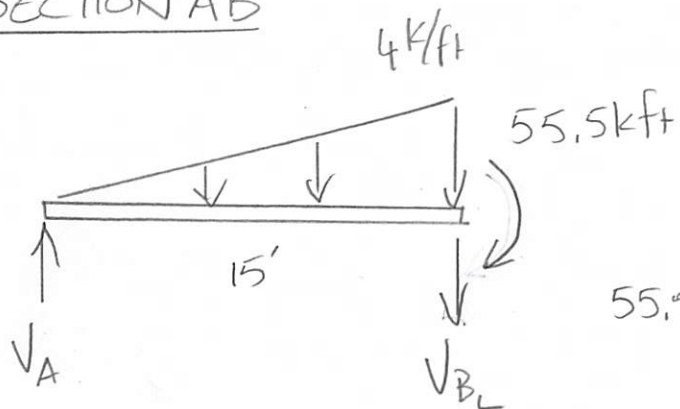


$$M_{BA} = \frac{3EI}{15'} [\theta_B] + 60 \text{ kft} = \underline{55.5 \text{ kft}} \quad \Rightarrow M_{BA} + M_{BC} = 0 \quad \checkmark$$

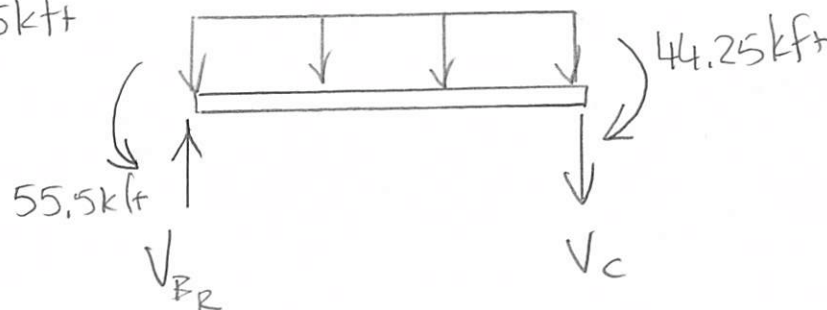
$$M_{BC} = \frac{2EI}{12'} [2\theta_B] - 48 \text{ kft} = \underline{-55.5 \text{ kft}}$$

$$M_{CB} = \frac{2EI}{12'} [\theta_B] + 48 \text{ kft} = \underline{44.25 \text{ kft}}$$

SECTION AB



SECTION BC



JOINT B

