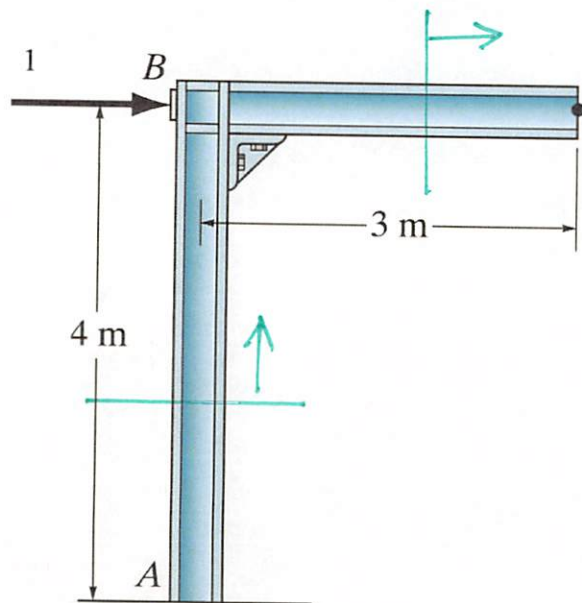
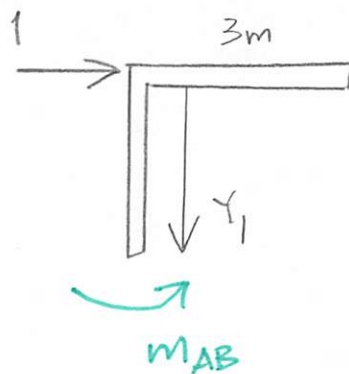


Example 8c-4: Compute the horizontal deflection at point B on the frame shown. Include only the effects of the bending moment in your virtual work equations.

Virtual Load



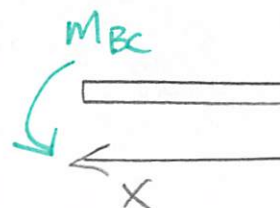
SECTION AB



$$\sum M_{cut} = 0 = M_{AB} - 1 \cdot y_1$$

$$M_{AB} = y_1$$

SECTION BC

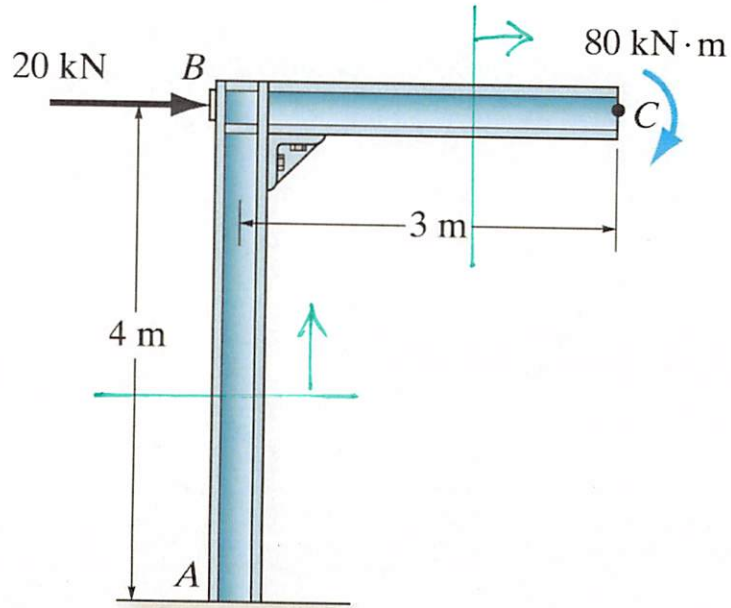


$$\sum M_{cut} = 0 = M_{BC}$$

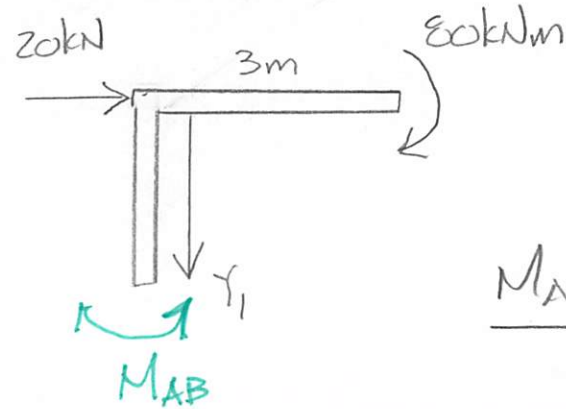
$$\Delta_{B \text{ hor.}} = \frac{1}{EI} \left[\int_0^4 (20y_1 + 80)(y_1) dy_1 \right] = \frac{1}{EI} \left[\frac{20y_1^3}{3} + 40y_1^2 \right]_0^4 = \frac{3,200 \text{ kNm}^3}{3EI}$$

Example 8c-4: Compute the horizontal deflection at point B on the frame shown. Include only the effects of the bending moment in your virtual work equations.

Real Loads



SECTION AB

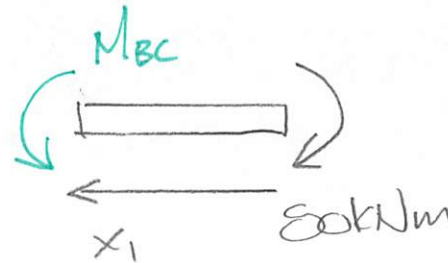


$$\sum M_{cut} = 0$$

$$= M_{AB} - 20kN y_1 - 80kNm$$

$$\underline{M_{AB} = [20 y_1 + 80] kNm}$$

SECTION BC



$$\sum M_{cut} = 0 = M_{BC} - 80kNm$$

$$\underline{M_{BC} = 80kNm}$$