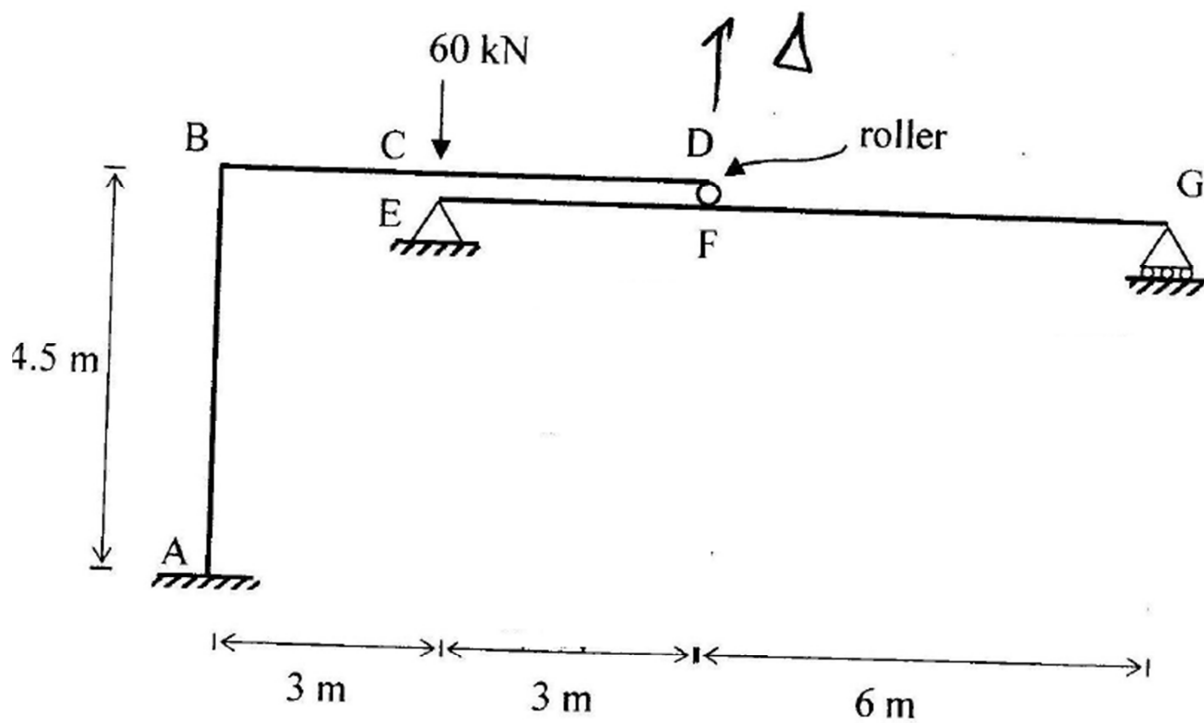
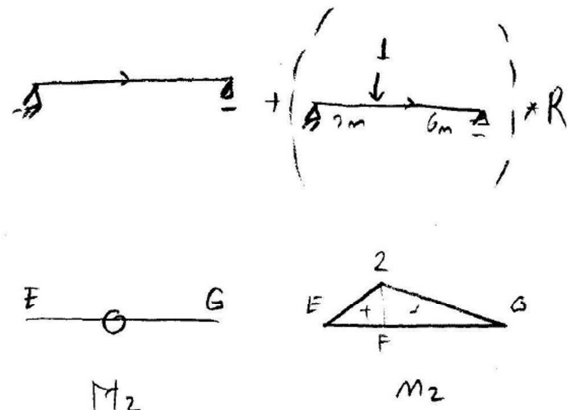
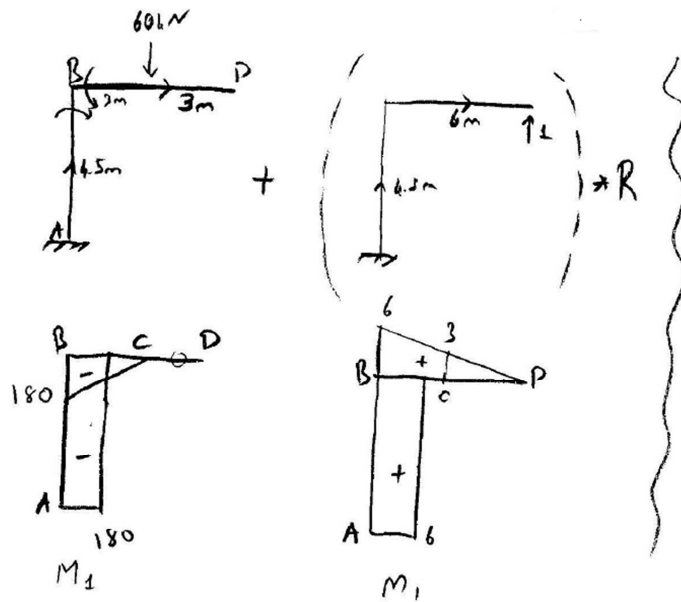


Find the member end forces for the structure given using Force Method. The moment of inertia is the same for all members and is equal to $I = 6 \times 10^{-5} \text{ m}^4$, $E = 200 \text{ GPa}$





$$\Delta = \frac{\int M_1 \cdot m_1 dx}{EI} + \left(\frac{\int M_1 \cdot m_1 dx}{EI} \right) \cdot R$$

$$\Delta = \frac{\int M_2 \cdot m_2 dx}{EI} + \left(\frac{\int M_2 \cdot m_2 dx}{EI} \right) \cdot R$$

$$EI \Delta = -4.5 \times 180 \times 6 - \frac{1}{6} \times 3 \times (3 + 2 \times 6) \times 180 + \left(4.5 \times 6 \times 6 + \frac{1}{3} \times 6 \times 6 \times 6 \right) R$$

$$= -6210 + 234R \quad (\uparrow)$$

$$EI \Delta = \left(\frac{1}{2} \times 9 \times 2 \times 2 \right) R$$

$$= 12R \quad (\downarrow)$$

$$R = 25.24 \text{ kN}$$

