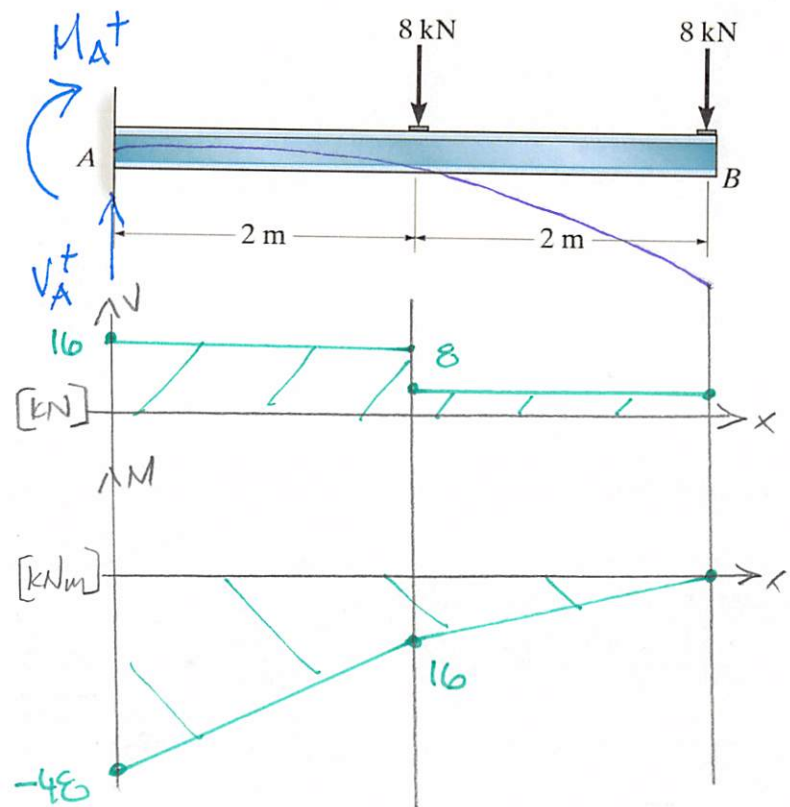


Example 7b-2: Determine the slope at B and the displacement at mid-span.
Assume that $E = 200 \text{ GPa}$ and $I = 550(10^6) \text{ mm}^4$.



$$\begin{aligned} \sum M_A = 0 &= -M_A - 8\text{kN}(2\text{m}) - 8\text{kN}(4\text{m}) : M_A = -48\text{kNm} \\ \sum F_y = 0 &= V_A - 8\text{kN} - 8\text{kN} \quad V_A = 16\text{kN} \end{aligned}$$

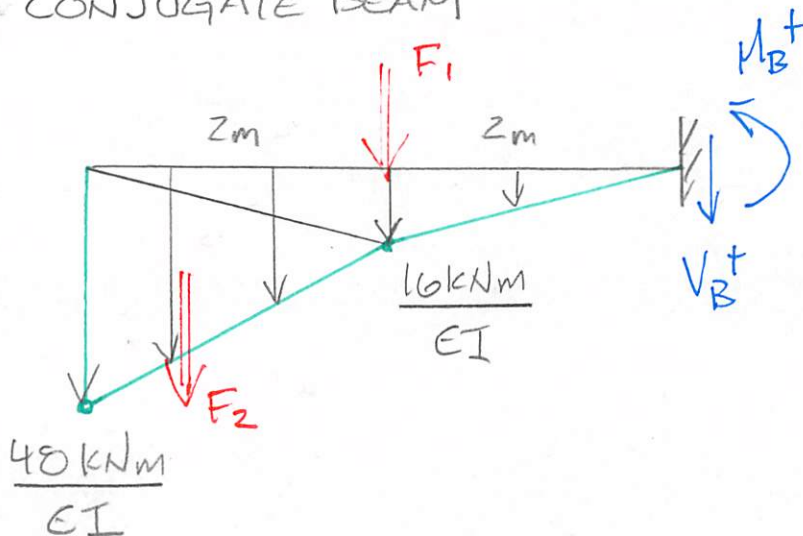
$$F_1 = \frac{1}{2}(4\text{m})\left(\frac{16\text{kNm}}{EI}\right) = \frac{32\text{kNm}^2}{EI}$$

$$F_2 = \frac{1}{2}(2\text{m})\left(\frac{48\text{kNm}}{EI}\right) = \frac{48\text{kNm}^2}{EI}$$

$$\sum F_y = 0 = -V_B - F_1 - F_2 \quad V_B = -F_1 - F_2$$

$$V_B = -\frac{80\text{kNm}^2}{EI} \Rightarrow \theta_B$$

CONJUGATE BEAM



$$\begin{aligned} \theta_B &= -\frac{80\text{kNm}^2}{200(10^6)\text{N} \cdot 550(10^6)\text{mm}^4} \left(\frac{10^3\text{mm}}{\text{m}}\right)^4 \\ &= \underline{\underline{-0.0007 \text{ RADIANS}}} \end{aligned}$$