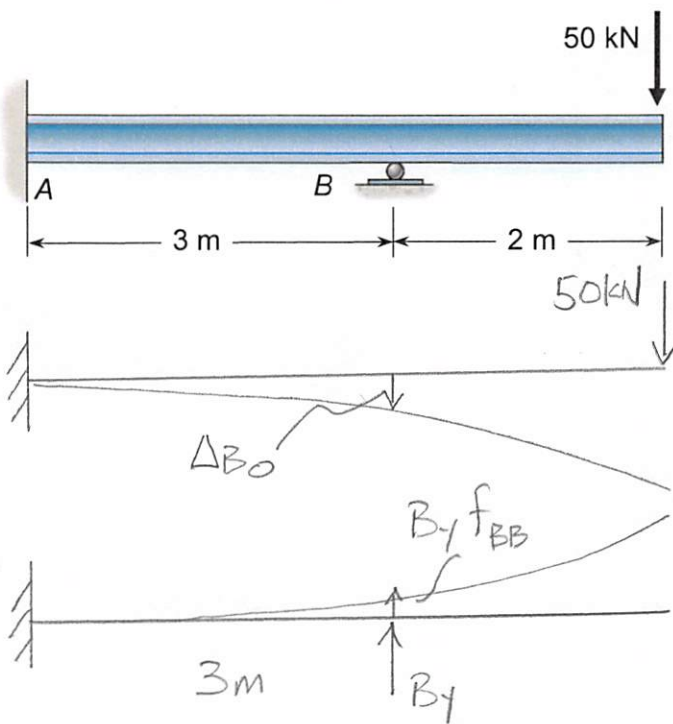


Determine the reactions at fixed support A and roller support B.

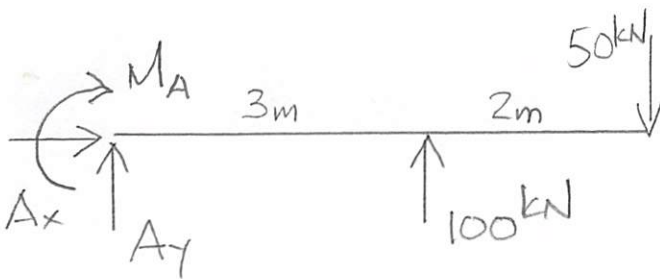


$$\Delta_{B0} + B_y f_{BB} = 0$$

$$\begin{aligned}\Delta_{B0} &= \frac{P}{6EI} [x^3 - 3Lx^2] \\ &= \frac{50\text{kN}}{6EI} [(3\text{m})^3 - 3(5\text{m})(3\text{m})^2] \\ &= -\frac{900\text{kNm}^3}{EI}\end{aligned}$$

$$f_{BB} = \frac{L^3}{3EI} = \frac{(3\text{m})^3}{3EI} = \frac{9\text{m}^3}{EI}$$

$$B_y = \frac{\Delta_{B0}}{-f_{BB}} = \underline{\underline{100\text{kN}}}$$



$$\sum M_A = 0$$

$$= -M_A - 50\text{kN}(5\text{m}) + 100\text{kN}(3\text{m})$$

$$\underline{\underline{M_A = 50\text{kNm}}}$$

$$\sum F_y = 0 = A_y + 100\text{kN} - 50\text{kN}$$

$$\underline{\underline{A_y = -50\text{kN}}}$$

$$\sum F_x = 0 = A_x$$