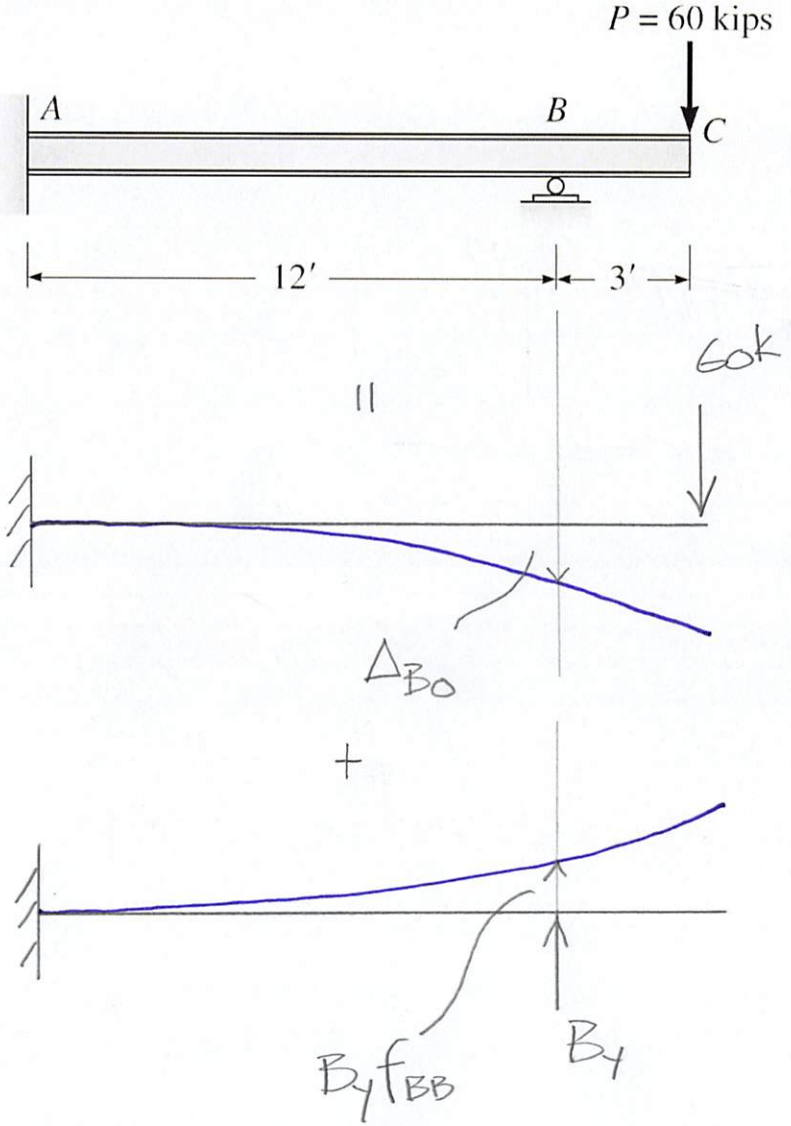
Problem 9a-4 – Compute the reactions and draw the shear and moment curves for the following beam.



$$\Delta_{B_0} + B_y f_{BB} = 0$$

$$\Delta_{B_0} = \frac{P}{6EI}\left[x^3 - 3Lx^2\right] \qquad L = 15' \quad x = 12'$$

$$= \frac{-60^k}{6EI}\left[(12')^3 - 3(15')(12')^2\right]$$

$$= -\frac{47{,}520\,k\text{-}ft^3}{EI}$$

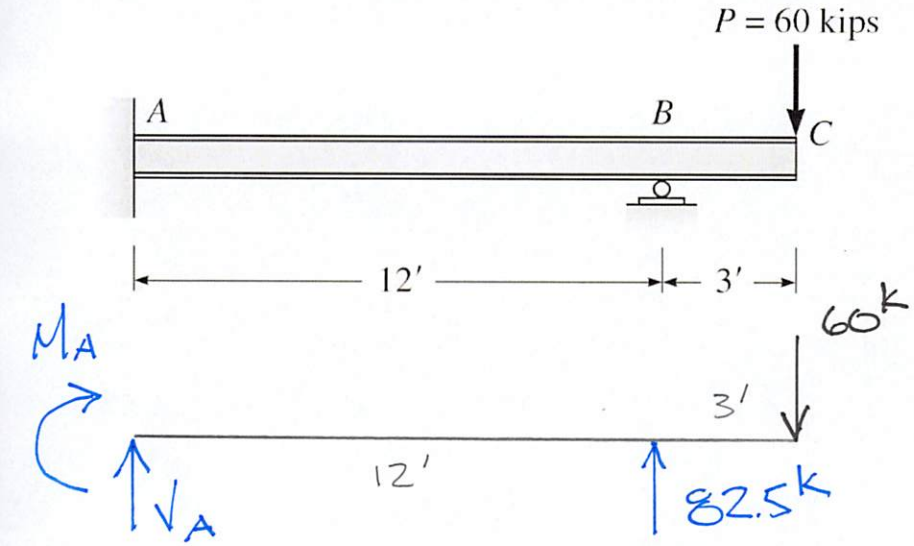
$$f_{BB} = \frac{L^3}{3EI} \qquad L = 12'$$

$$= \frac{(12')^3}{3EI} = \frac{576\,ft^3}{EI}$$

$$\Rightarrow -\frac{47{,}520\,k\text{-}ft^3}{EI} + B_y\left[\frac{576\,ft^3}{EI}\right]$$

$$B_y = 82.5^k$$

Problem 9a-4 – Compute the reactions and draw the shear and moment curves for the following beam.

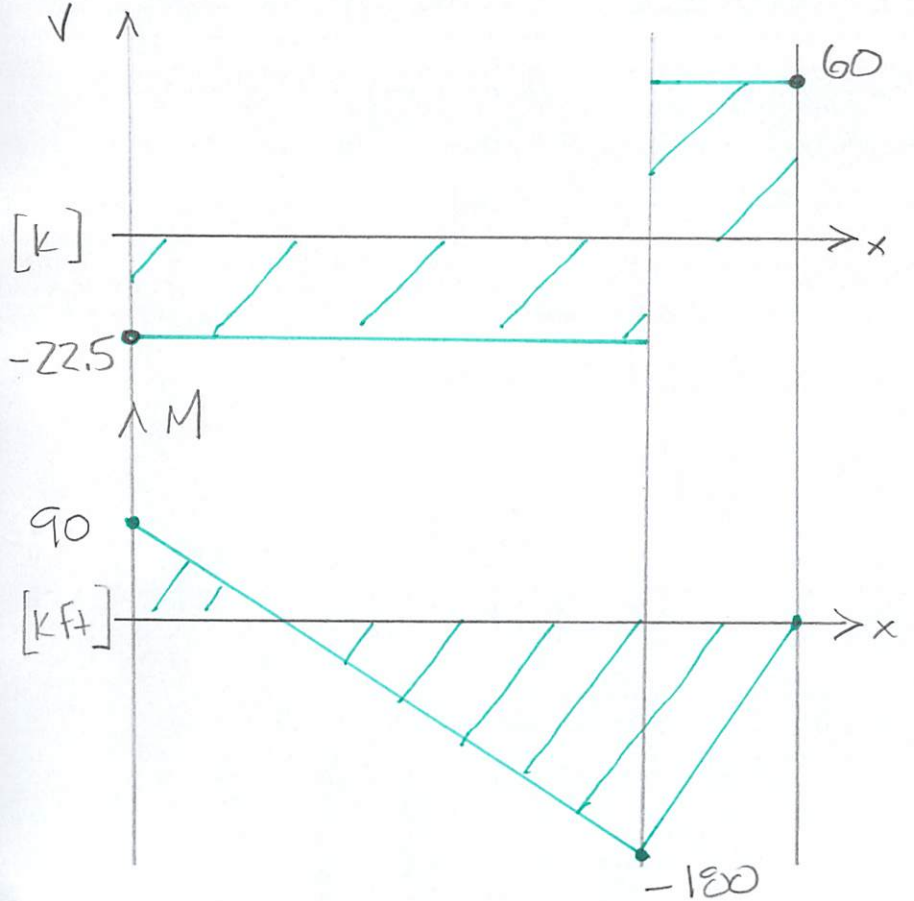


$$\circlearrowleft^{+}\sum M_A = 0 = -60^{k}(15') + 82.5^{k}(12') - M_A$$

$$\underline{\underline{M_A = 90\ k\text{-}ft}}$$

$$+\uparrow \sum F_y = 0 = V_A + 82.5^{k} - 60^{k}$$

$$\underline{\underline{V_A = -22.5^{k}}}$$



$$\Delta V = \int w\,dx \qquad \frac{dV}{dx} = w$$

$$\Delta M = \int V\,dx \qquad \frac{dM}{dx} = V$$