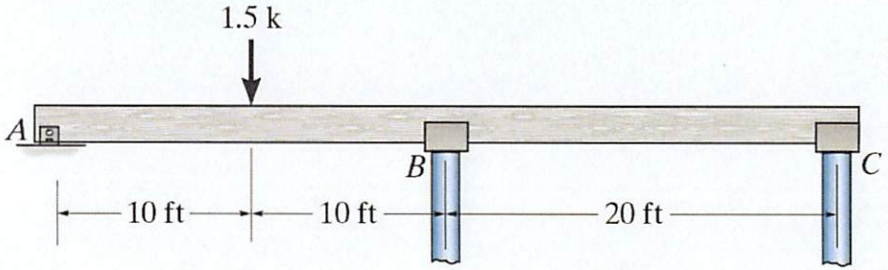
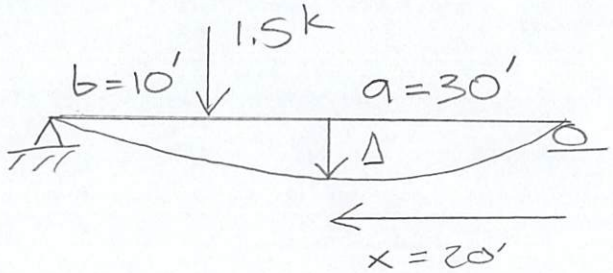
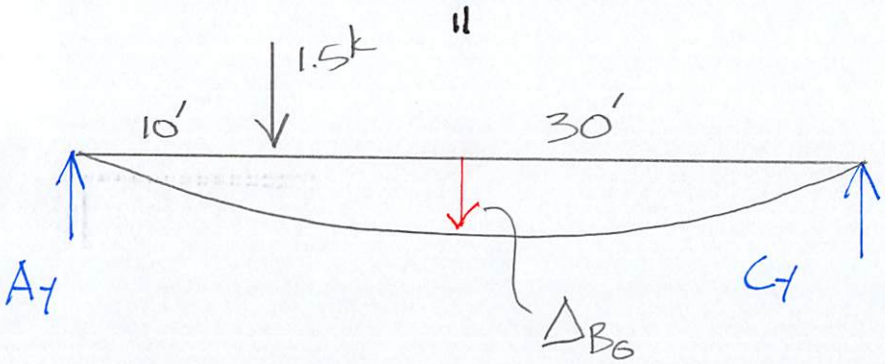
Problem 9-8 - Determine the reactions at the supports. Assume *A* is a pin and *B* and *C* are rollers. *EI* is constant.



FROM TABLE:

$\Delta_{B_0} \Rightarrow$ USE FORM ROTATED

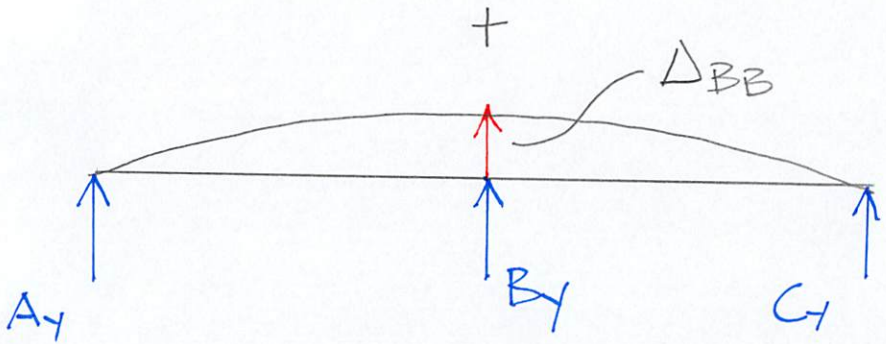




$$\Delta_{B_0} = \frac{Pbx}{6LEI}\left[L^2 - b^2 - x^2\right]$$

$$= \frac{-1.5k(10')(20')}{6(40')EI}\left[(40')^2 - (10')^2 - (20')^2\right]$$

$$= -\frac{1{,}375\,k\,ft^3}{EI}$$



$$\Delta_{BB} = \frac{B_y L^3}{48EI} = \frac{B_y(40')^3}{48EI} = \left(\frac{4{,}000\,ft^3}{3EI}\right)B_y$$

$$\Delta_{B_0} + \Delta_{B_B} = 0 \Rightarrow -\frac{1{,}375\,k\,ft^3}{EI} + B_y\frac{4{,}000\,ft^3}{3EI}$$

$$B_y = 1{,}03\,k$$

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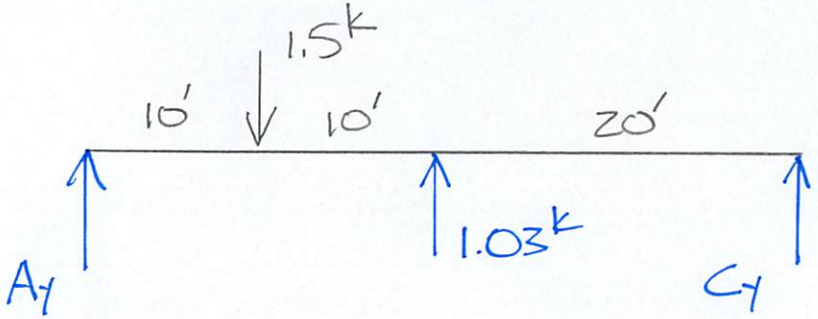

$$\circlearrowleft \sum M_A = 0 = -1.5k(10') + 1.03^k(20') + C_y(40')$$

$$C_y = -0.14^k$$

$$+\uparrow \sum F_y = 0 = A_y + C_y + 1.03^k - 1.5^k$$

$$A_y = 0.61^k$$