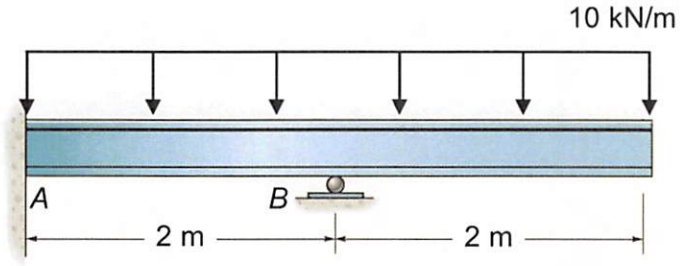
CIVL 4122 Quiz #1 F25 Name: _____

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



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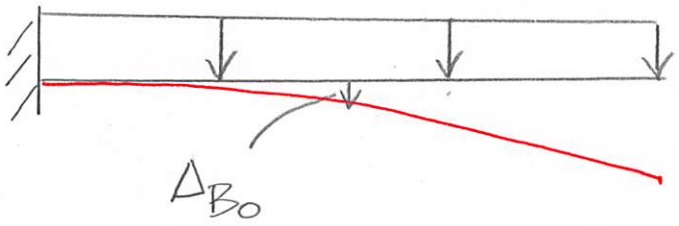

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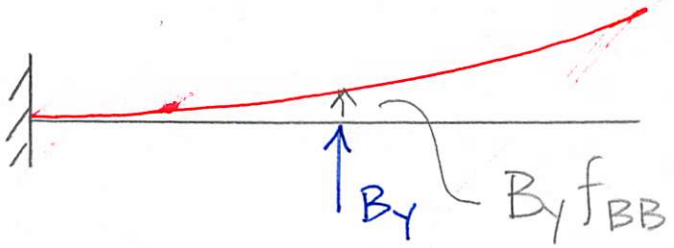


$$\Delta_{B_0} + B_y f_{BB} = 0$$

$$\Delta_{B_0} \Rightarrow -\frac{w}{24EI}\left[x^4 - 4Lx^3 + 6L^2x^2\right]$$

$x = 2m \quad L = 4m$

$$\Delta_{B_0} = \frac{-10kN/m}{24EI}\left[(2m)^4 - 4(4m)(2m)^3 + 6(4m)^2(2m)^2\right]$$

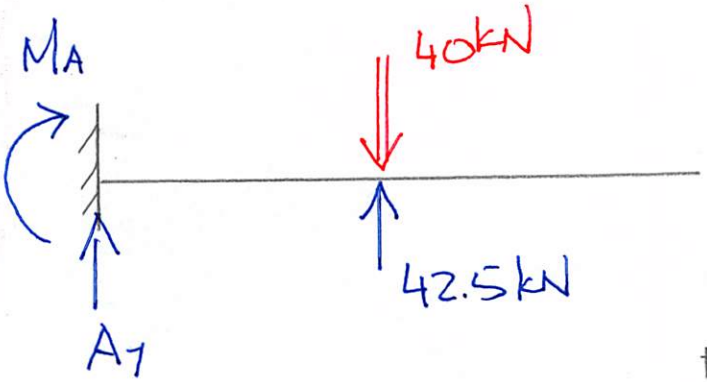
$$= -\frac{340kNm^3}{3EI}$$

$$f_{BB} = \frac{L^3}{3EI} \quad L = 2m$$

$$= \frac{(2m)^3}{3EI} = \frac{8m^3}{3EI}$$

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

$$-\frac{340kNm^3}{3EI} + B_y \frac{8m^3}{3EI} = 0 \Rightarrow \underline{B_y = 42.5kN}$$



$$\circlearrowleft + \sum M_A = 0 = -M_A - 40kN(2m) + 42.5kN(2m)$$

$$\underline{M_A = 5kNm}$$

$$+\uparrow \sum F_y = 0 = A_y - 40kN + 42.5kN$$

$$\underline{A_y = -2.5kN}$$