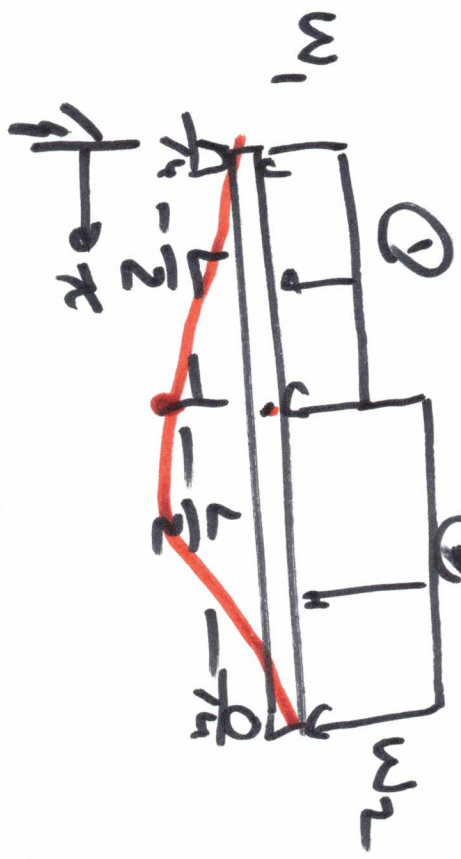


Boundary Conditions



① $0 \leq x \leq \frac{L}{2}$

② $\frac{L}{2} \leq x \leq L$

Find M_1 in region ①

Find M_2 in region ②

$$EI V_1'' = M_1$$

$$EI V_1' = () + C_1$$

$$EI V_1 = () + C_1 x + C_2$$

$$x=0, V_1=0$$

$$V_1 \Big|_{x=\frac{L}{2}} = V_2 \Big|_{x=\frac{L}{2}}$$

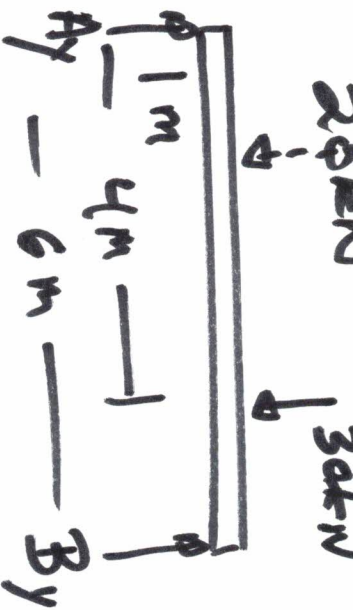
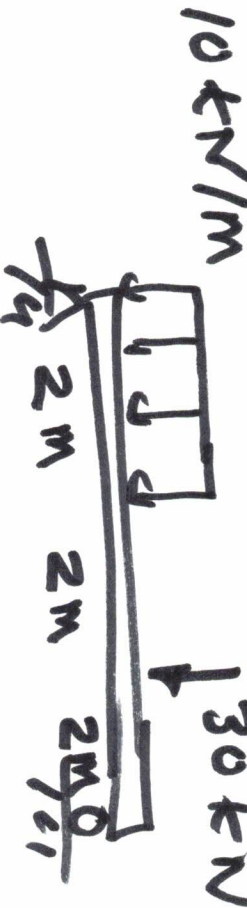
$$EI V_2'' = M_2$$

$$EI V_2' = () + C_3$$

$$EI V_2 = () + C_3 x + C_4$$

$$x=L, V_2=0$$

$$V_1' \Big|_{x=\frac{L}{2}} = V_2' \Big|_{x=\frac{L}{2}}$$



$$\sum M_A \quad B_y \cdot 6 - 30 \cdot 4 - 20 \cdot 1 = 0$$

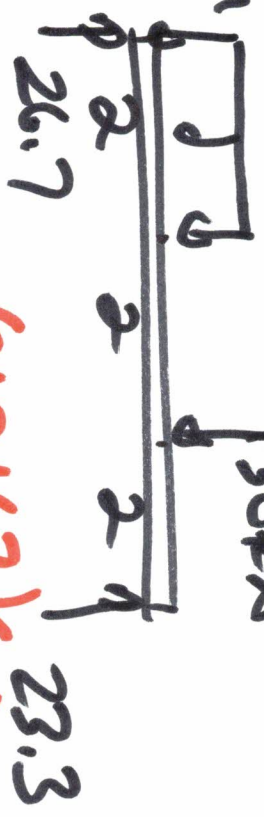
$$B_y = 23.3 \text{ kN}$$

$$\sum F_y \uparrow$$

$$A_y - 20 - 30 + B_y = 0$$

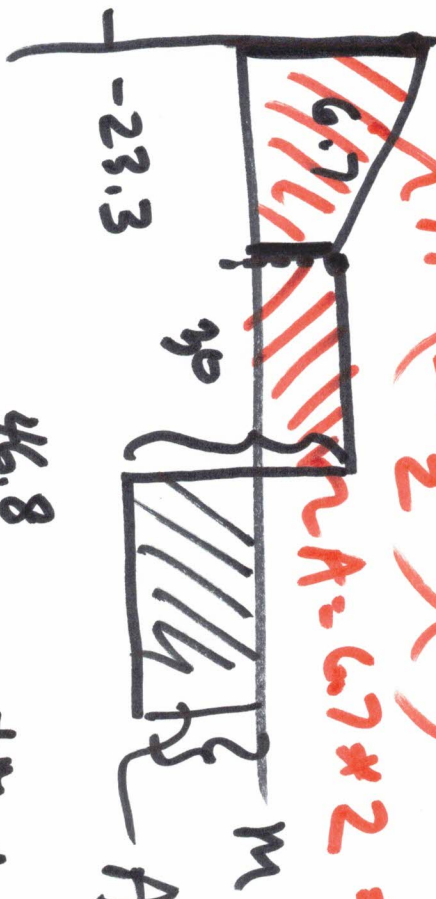
$$A_y = +20 + 30 - 23.3$$

$$A_y = 26.7$$



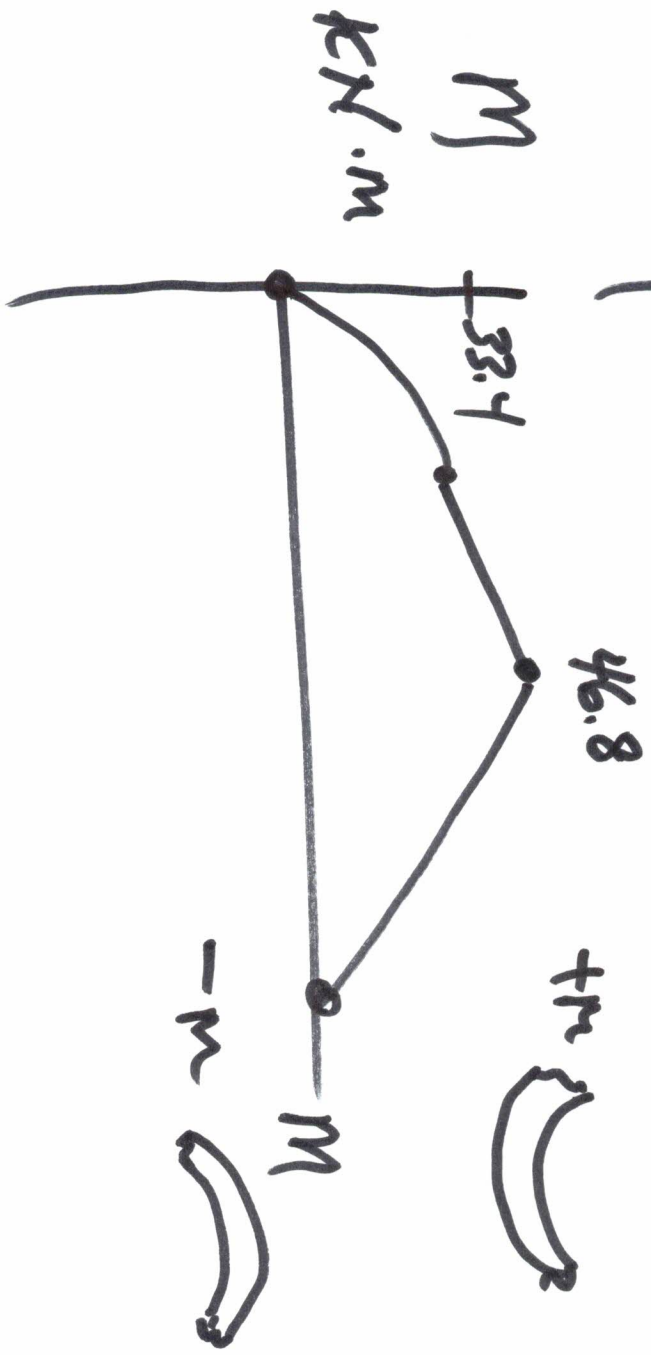
$$A = \left(\frac{26.7 + 6.7}{2} \right) (2) = 33.4$$

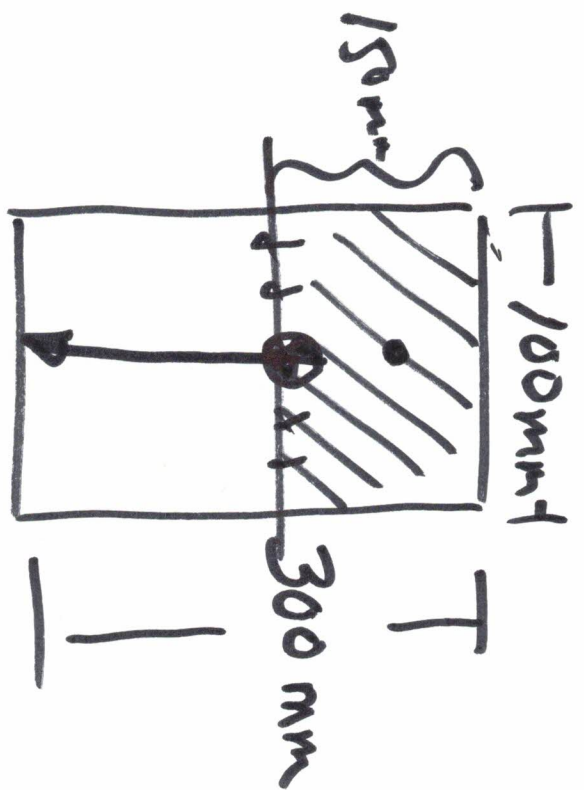
kN



$$A = 6.7 * 2 = 13.4$$

$$A = (-23.3)(2)$$





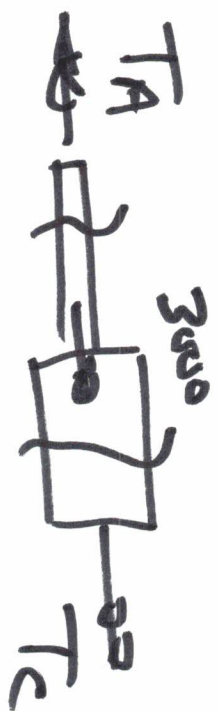
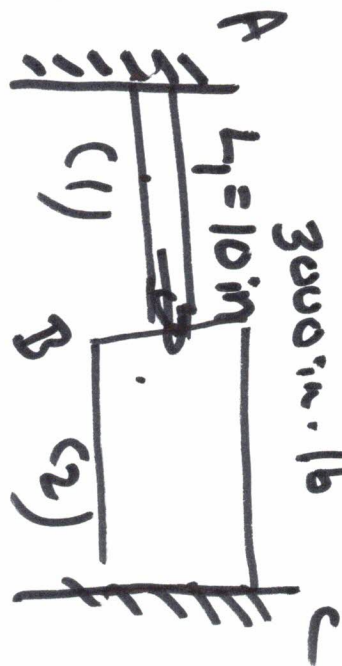
$$\sigma = -\frac{M y}{I}$$

$$I = \frac{1}{12} (6.100) (300)^3 \text{ m}^4$$

$$\sigma = \frac{-46.8 (10^3) (-0.150)}{\frac{1}{12} 0.1 (0.3)^3} \text{ Pa}$$

$$T = \frac{V Q}{I \tau} = \frac{26.7 (10^3) Q}{\frac{1}{12} (0.1) (0.3)^3 (0.1)} \text{ Pa}$$

$$Q = \underbrace{0.075}_y \underbrace{(0.1)(0.15)}_A$$

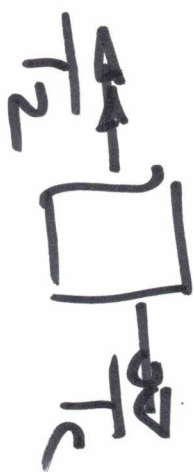


$$\sum F_x = -T_A + 3000 + T_C = 0$$

$$\phi_1 + \phi_2 = 0$$



$$T_1 = T_A$$



$$T_2 = T_C$$

$$\frac{T_1 L_1}{EI_1 \delta_1} + \frac{T_2 L_2}{EI_2 \delta_2} = 0$$

$$T_1 = -T_2 \frac{L_2}{L_1} \frac{EI_1}{EI_2} \frac{\delta_1}{\delta_2}$$

$$-T_1 + 3000 + T_2 = 0$$

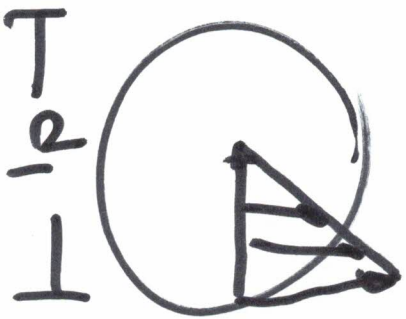
Sub for T_2 & T_1

$$T_{\max 1} = \frac{T_1 d_1/2}{I_{p1}}$$

$$T_{\max 2} = \frac{T_2 d_2/2}{I_{p2}}$$

$$\phi_B = \phi_1$$

$$\phi_B = |\phi_2|$$



$$T = \tau_1 r$$

