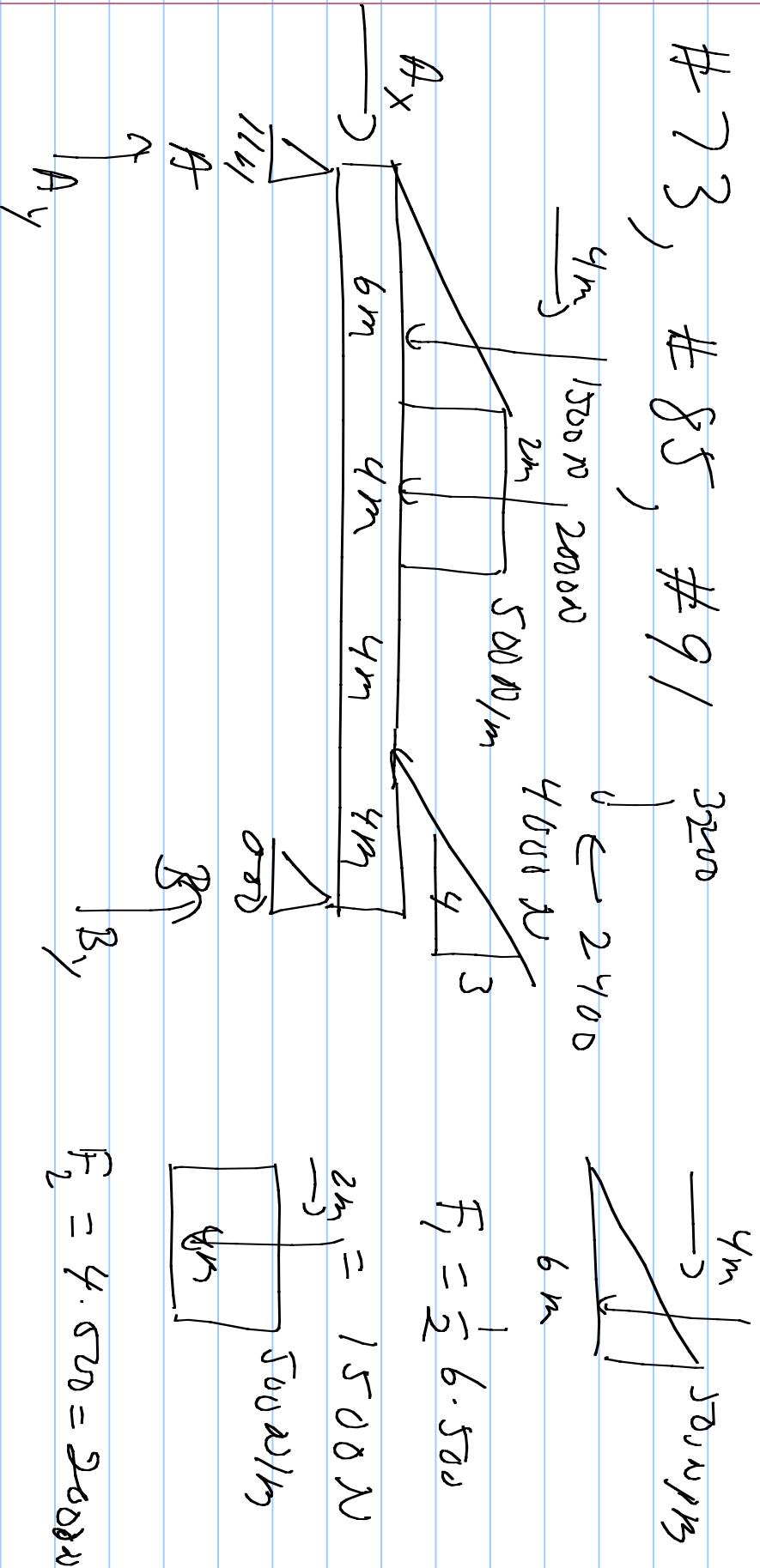


# EGR 180 6/30

#73, #85, #91



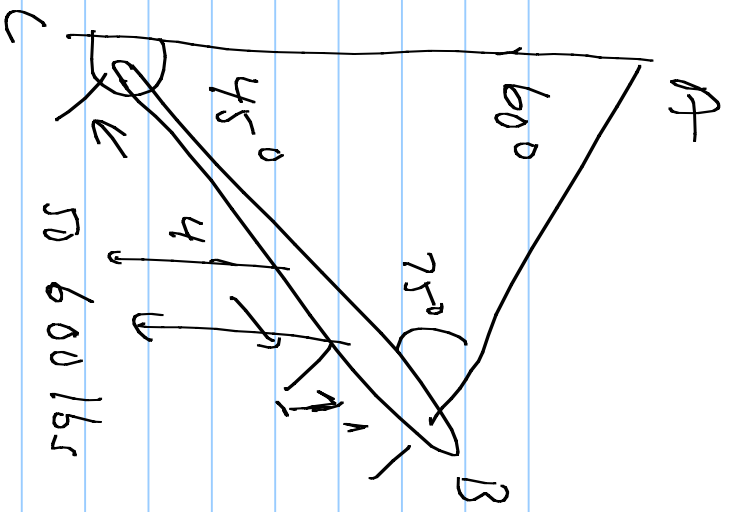
$$\sum M_A = -4 \cdot 1500 - 8 \cdot 2000 - 14 \cdot 3200 + 18B_y = 0$$

$$18B_y = 66,800 \Rightarrow B_y = 3711 \text{ N}$$

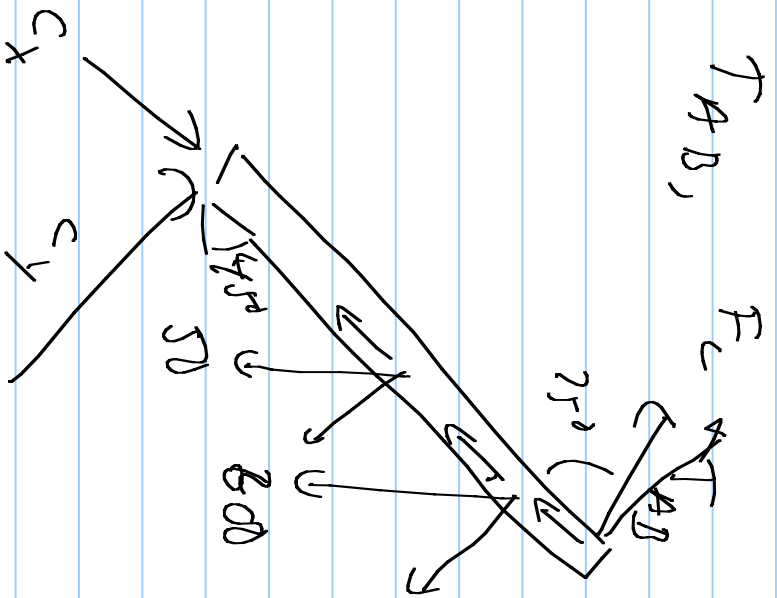
$$\sum F_y = A_y - 1500 - 2000 - 3200 + 3711 = 0$$

$$A_y = 2989 \text{ N}$$

$$\sum F_x = A_x - 2400 = 0 \quad A_x = 2400 \text{ N}$$



Beam weighs  $10 \text{ lb/ft}$  ~~ft~~  $\rightarrow 550 \text{ lb}$



$$\sum M_C = -2.5 \cdot 50/\sqrt{2} - 4 \cdot 600/\sqrt{2} + 5 \cdot T_{AB} \sin(75) = 0$$

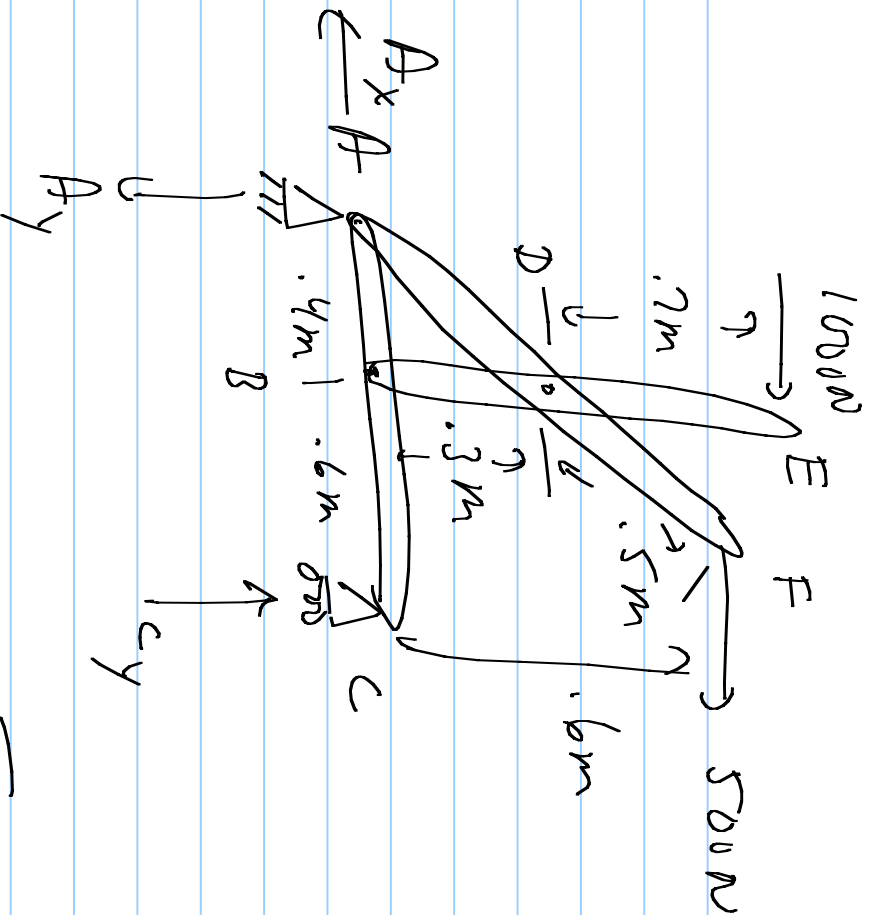
$$T_{AB} = \frac{585}{\sqrt{2} \sin(75)} = 369.7 \text{ lbs}$$

$$\sum F_T = C_X - 50/\sqrt{2} - 600/\sqrt{2} - 369.7 \cos(75) = 0$$

$$C_X = 555.3 \text{ lbs}$$

$$\sum F_N = C_Y - 50/\sqrt{2} - 600/\sqrt{2} + 369.7 \sin(75) = 0$$

$$C_Y = 102.5 \text{ lbs}$$



$$\sum M_A = -1 \cdot 1000 - 0.6 \cdot 500$$

$$1 \cdot C_y = 0$$

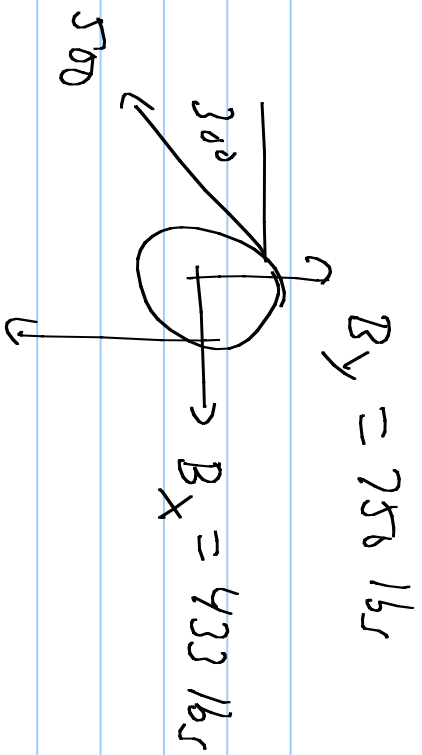
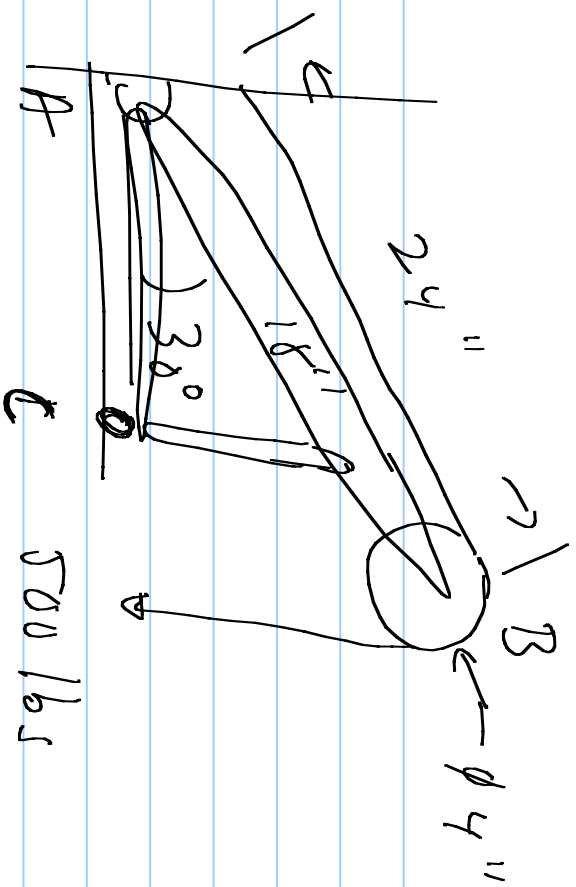
$$C_y = 1300 \text{ N}$$

$$\sum F_y = A_y + C_y = 0$$

$$A_y = 1300 \text{ N}$$

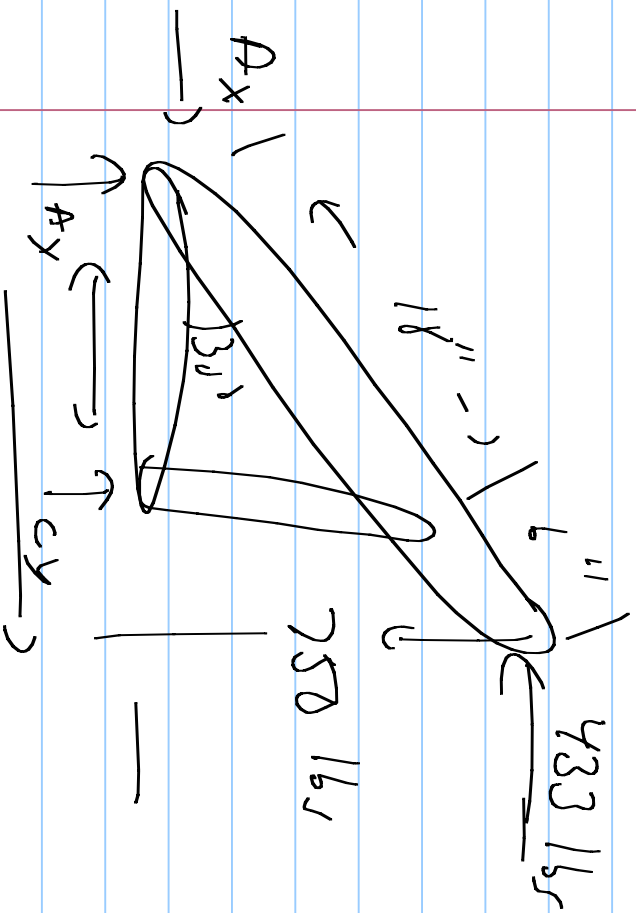
$$\sum F_x = -A_x + 1000 + 500 = 0$$

$$A_x = 1500 \text{ N}$$



500 lbs

500



$$B_x = 500 \cos(30) = 433 \text{ lb}$$

$$B_y = 500 \sin(30) = 258 \text{ lb}$$

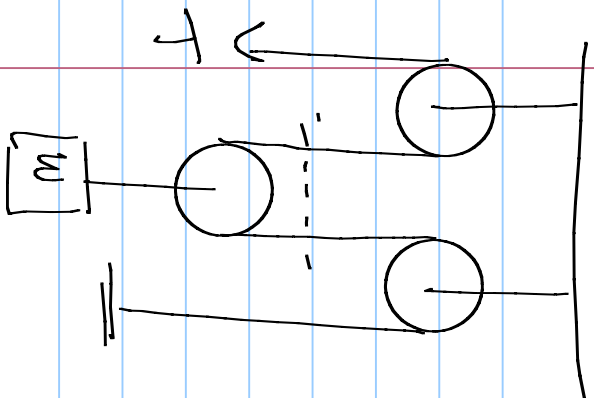
$$\sum M_A = 18 \cos(30^\circ) \cdot C_y - 24 \sin(30^\circ) \cdot 750 + 433 \cdot 12 = 0$$

$$C_y = 666.7 \text{ lbs}$$

$$\sum F_x = A_x - 433 = 0 \Rightarrow A_x = 433 \text{ lbs}$$

$$\sum F_y = A_y + 666.7 - 750 = 0$$

$$A_y = 83.3 \text{ lbs}$$

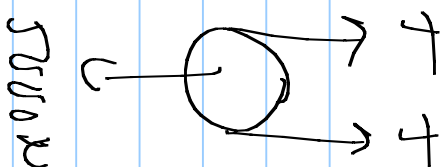


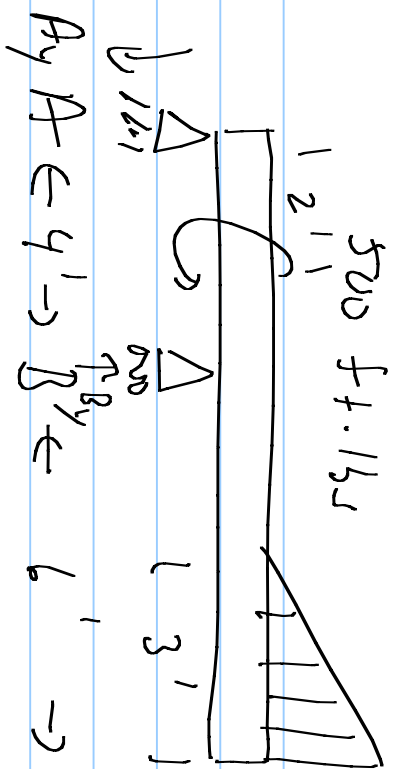
$$W = 5000 \text{ N}$$

$$T = ?$$

$$2T = 5000 \text{ N}$$

$$T = 2500 \text{ N}$$





$$\sum F_x = 0 \Rightarrow A_x = 0$$

$$\sum F_y = 0 \Rightarrow F = 150 \text{ lb}$$

$$\sum M_A = 4 B_y + 500 - 9 \cdot 150 = 0$$

$$B_y = 212.5 \text{ lb}$$

$$\sum F_y = -A_y + 212.5 - 150 = 0$$

$$A_y = 62.5 \text{ lb}$$

