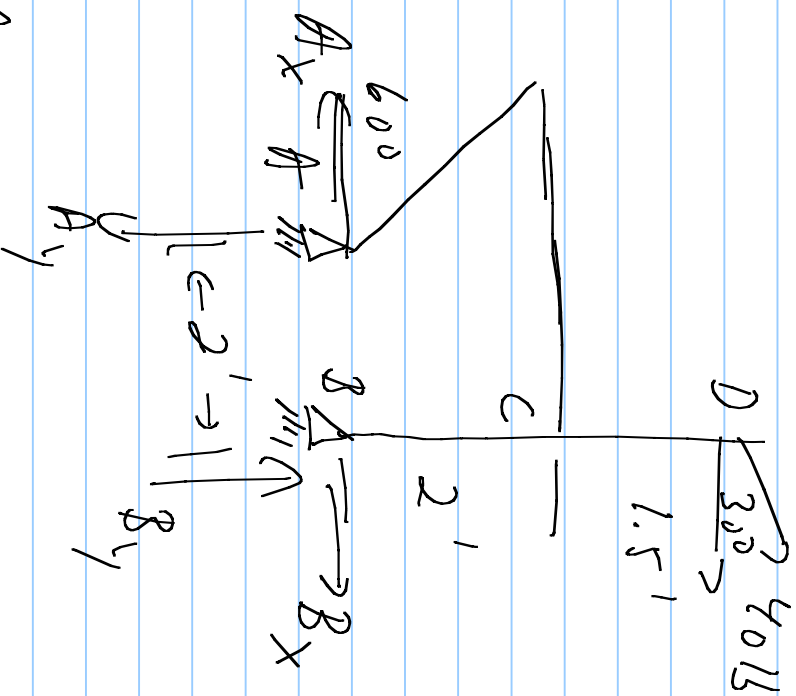


EGR180 ← 7/8

7-83)



$$\sum M_A = 2B_y + 2 \cdot 20$$

$$-20\sqrt{3}(3.5) = 0$$

$$B_y = 35\sqrt{3} - 20 = 46.6155$$

$$\sum F_y = -A_y + B_y + 20 = 0$$

$$A_y = B_y + 20 = 35\sqrt{3} = 60.6$$

$$\frac{A_x}{A_y} = \frac{2}{2} \Rightarrow A_x = A_y = 60.6155 \quad \sum F_x = -A_x + B_x + 20\sqrt{3} = 0$$

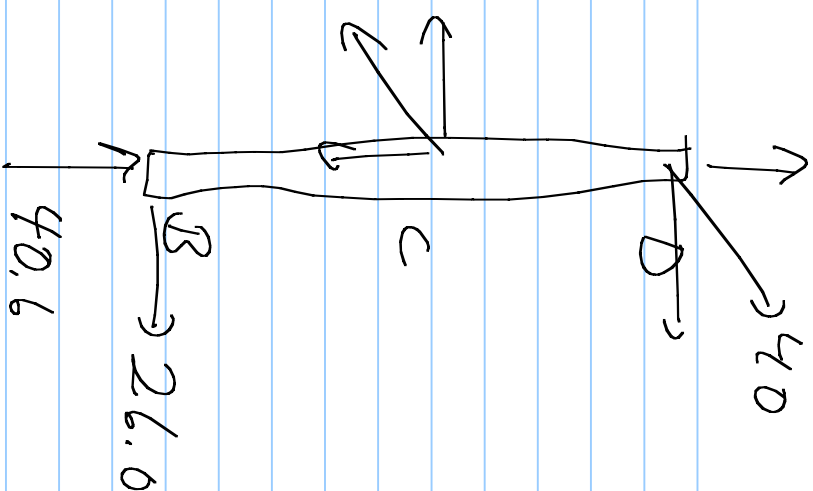
$$B_x = A_x - 20\sqrt{3} = 26.0 \text{ lbs}$$

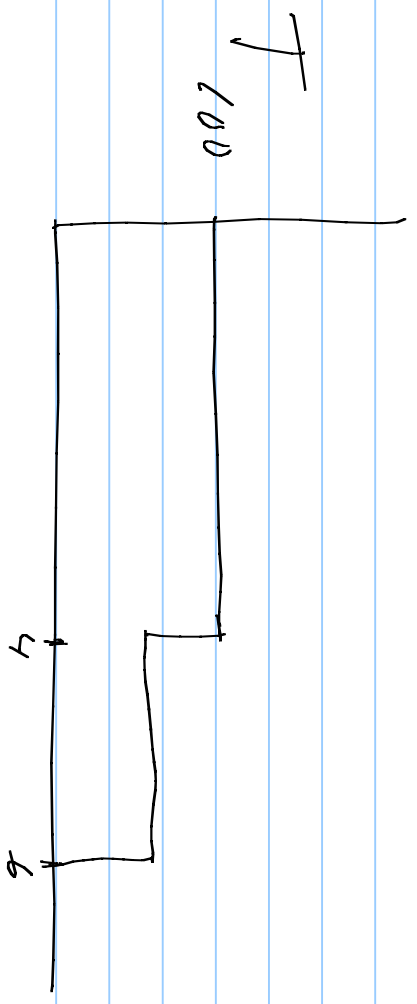
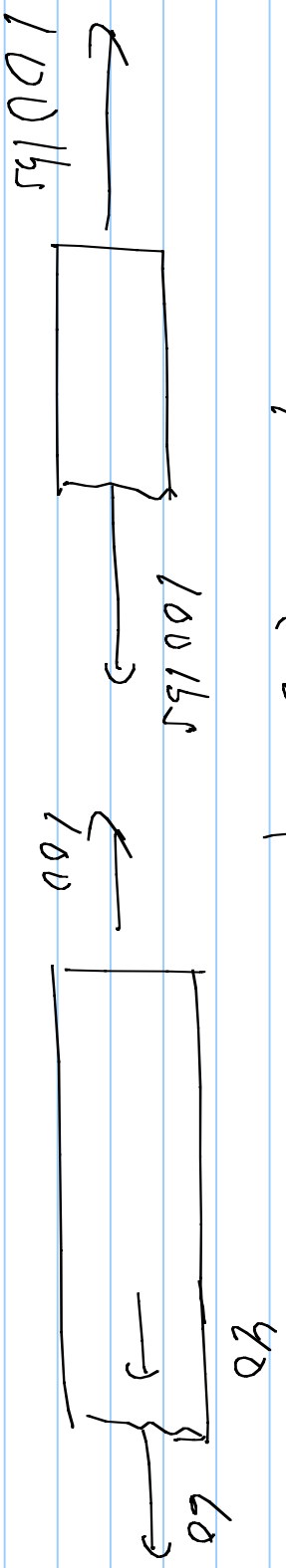
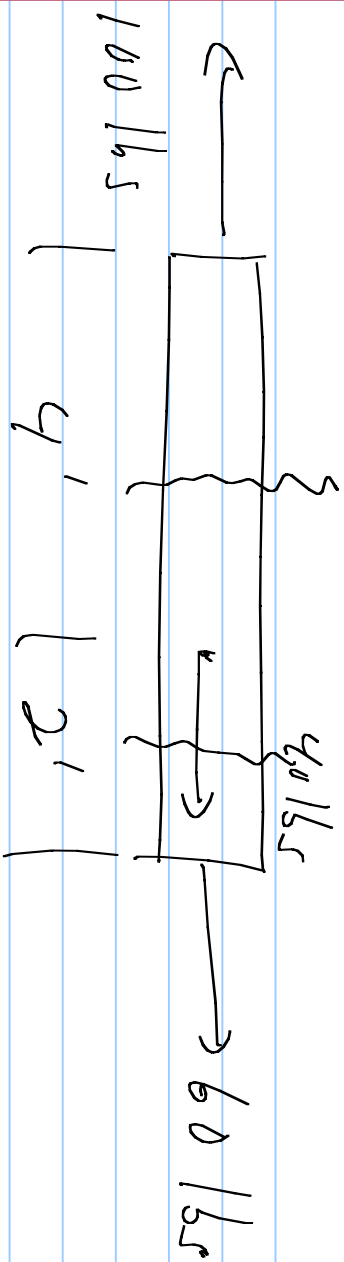
$$\sum M_B = 2F_{Ac_x} - 3.5 \cdot 20\sqrt{3} = 0$$

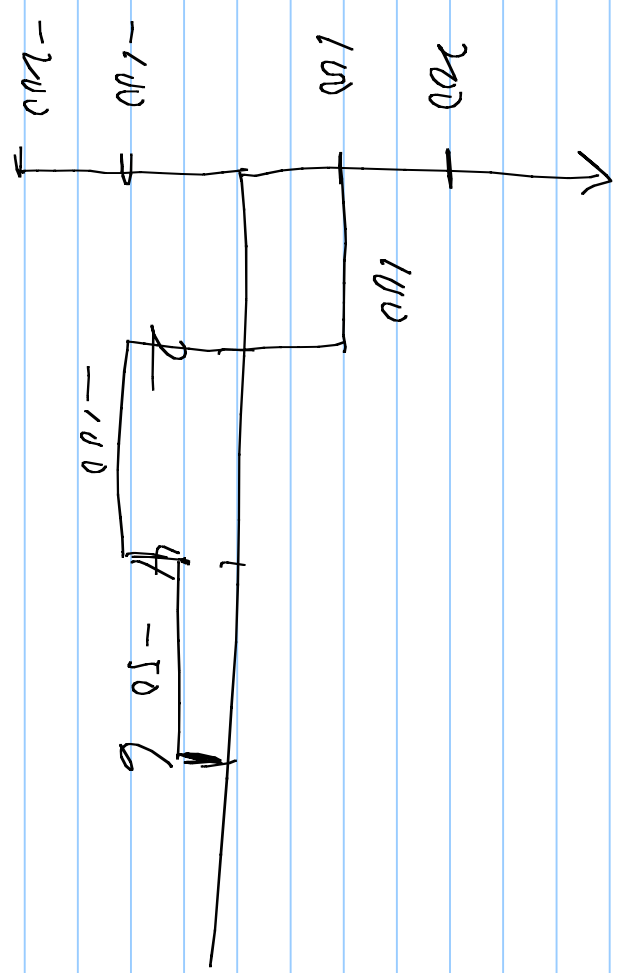
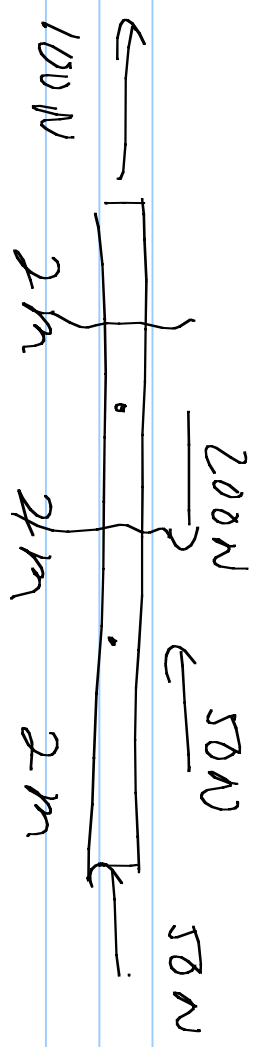
$$F_{Ac_x} = 35\sqrt{3} = 60.6 \text{ lbs}$$

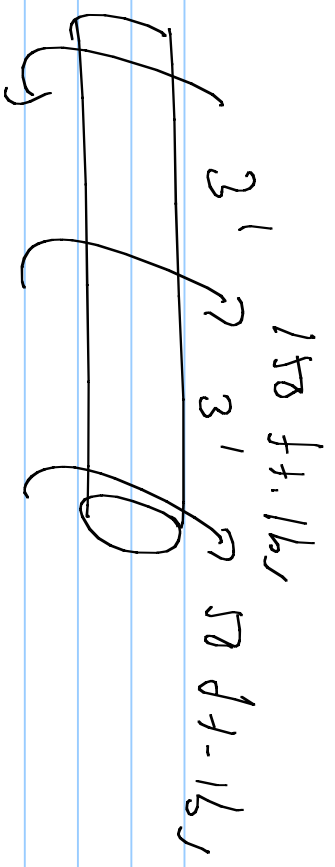
$$\sum F_y = 20 + 40.6 - F_{Ac_y} = 0$$

$$F_{Ac_y} = 60.6 \Rightarrow F_{Ac} = 85.7 \text{ lbs}$$

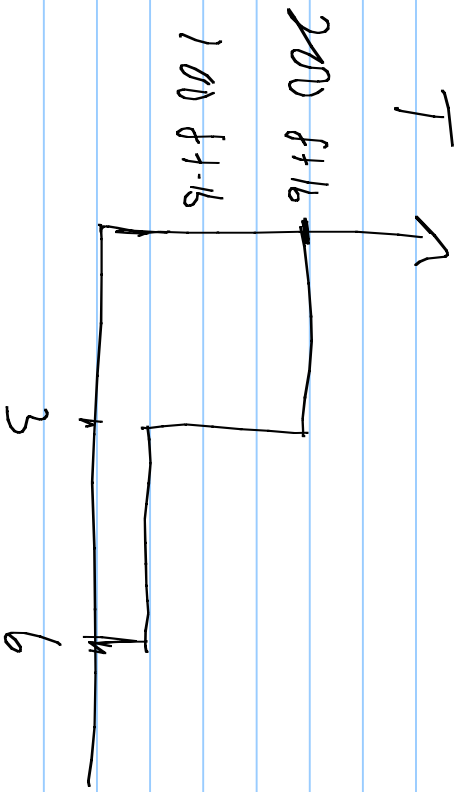


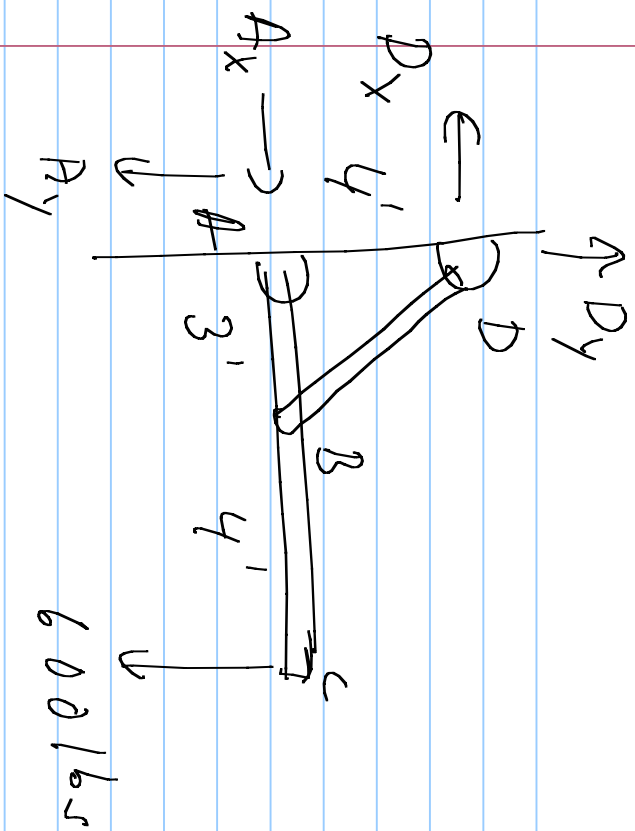






200 ft. lbs





ABC

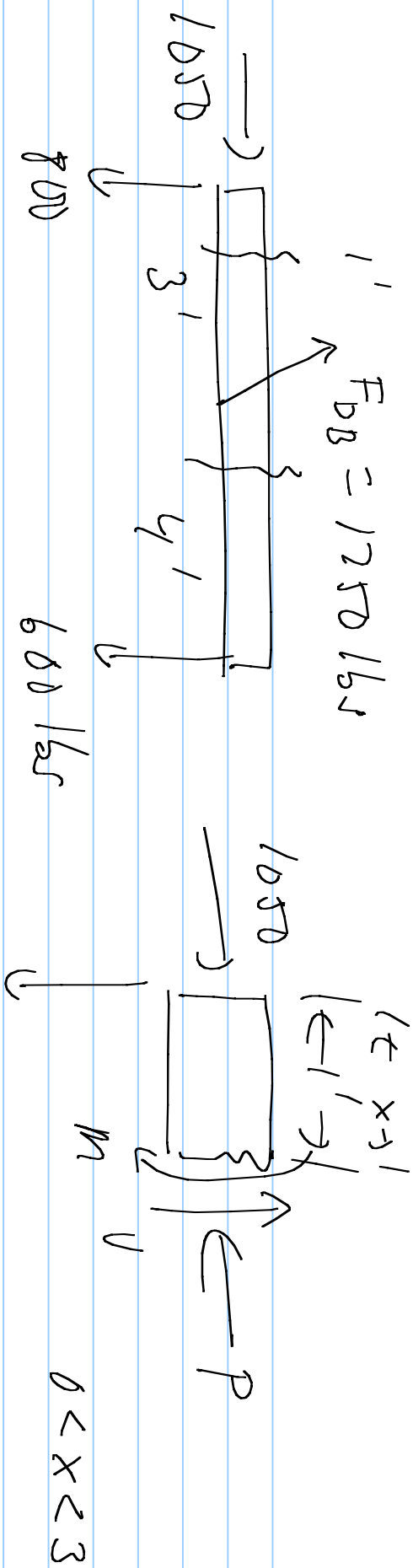
$$\sum M_A = 4D_x - 7.600 = 0$$

$$D_x = 1050 \text{ lbs}$$

$$\frac{D_y}{D_x} = \frac{4}{3} = \frac{D_y}{1050} \quad D_y = \frac{4}{3}(1050)$$

$$\sum F_x \Rightarrow A_x = 1050 \text{ lbs} \quad = 1400 \text{ lbs}$$

$$\sum F_y = 0 = -A_y + 1400 - 600 \Rightarrow A_y = 800 \text{ lbs}$$

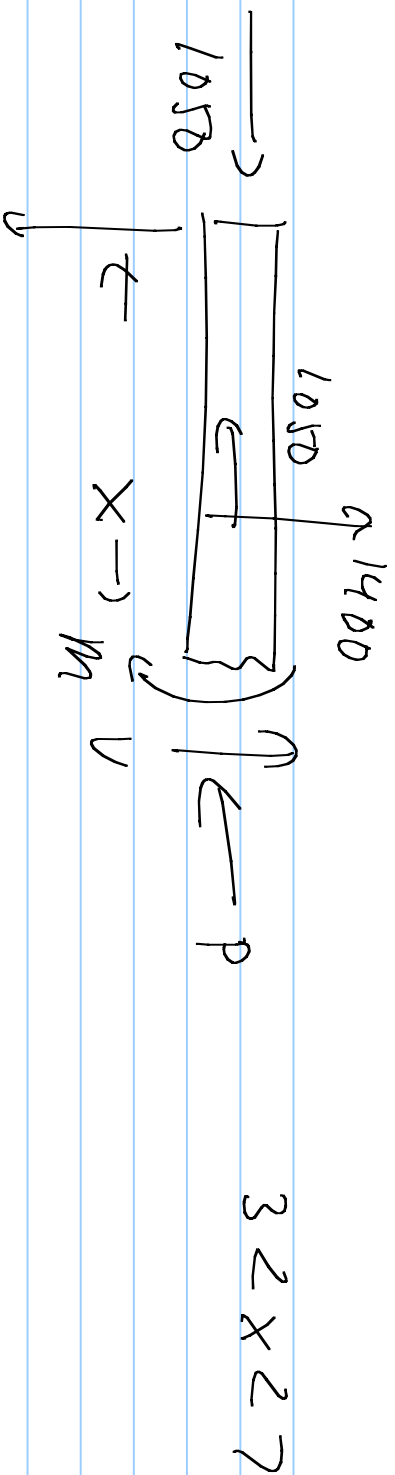


$$\sum F_x = 1050 - P = 0 \Rightarrow P = 1050 \text{ lbs}$$

$$\sum F_y = -800 + V = 0 \Rightarrow V = 800 \text{ lbs}$$

$$\sum M_A = -m + 1 \cdot V = 0 \Rightarrow m = 800 \text{ ft. lbs}$$

$$-m + Vx = 0 \Rightarrow m = 800x \text{ ft. lbs}$$



(2D)

$$\sum F_x = 1050 - 1050 - P = 0 \Rightarrow P = 0$$

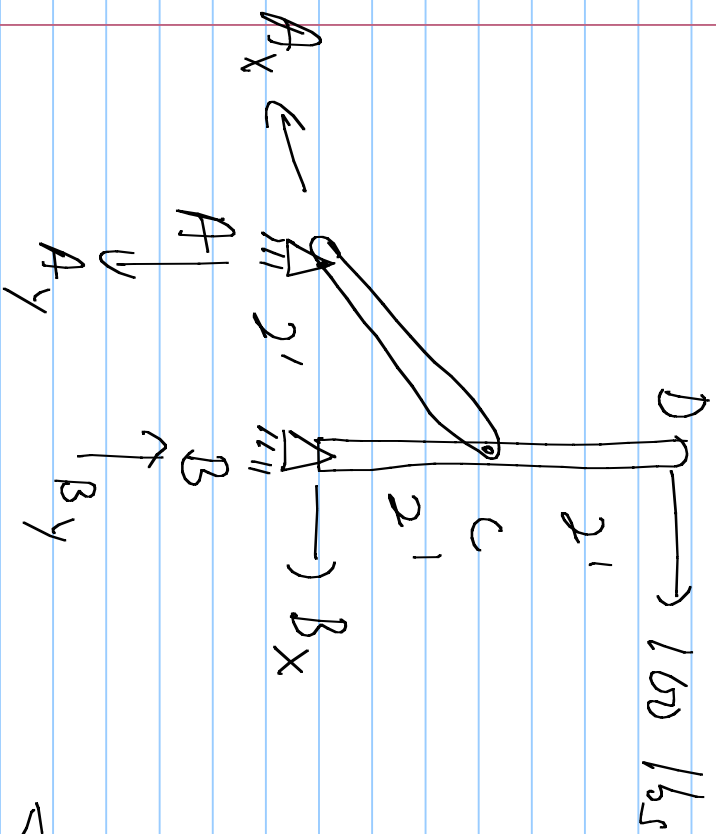
$$\sum F_y = -8200 + 1400 + V = 0 \Rightarrow V = \underline{-6800 \text{ lbs}}$$

$$\sum M_A = 3 \cdot 1400 - M + \bar{V}X = 0 \quad M = 4200 - 6800X$$

$$V = \begin{cases} 800 & 0 \leq x < 3 \\ -600 & 3 \leq x \leq 7 \end{cases}$$

$$M = \begin{cases} 800x & 0 \leq x < 3 \\ 4200 - 600x & 3 \leq x \leq 7 \end{cases}$$

$$M(0) = 0, \quad M(7) = 0$$



$$\sum M_B = 2A_y - 4 \cdot 160 = 0$$

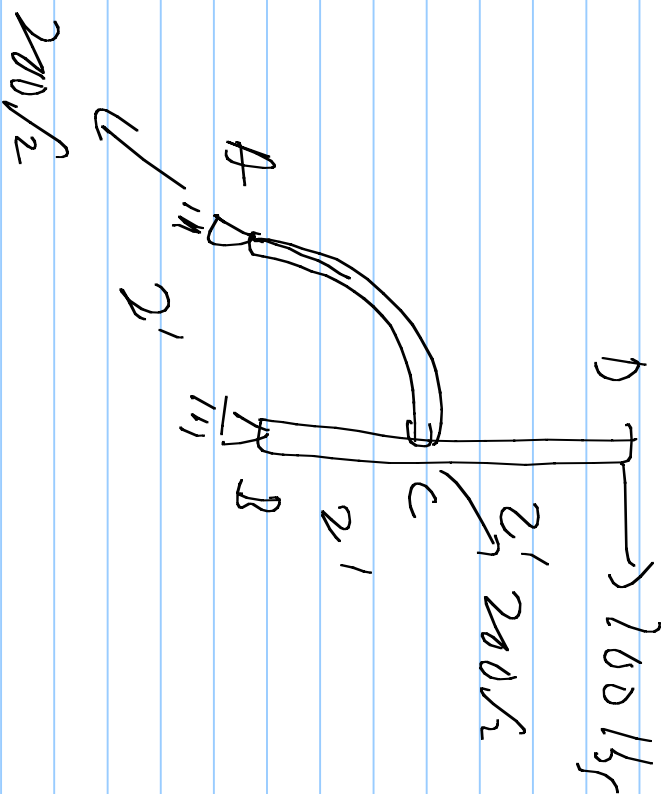
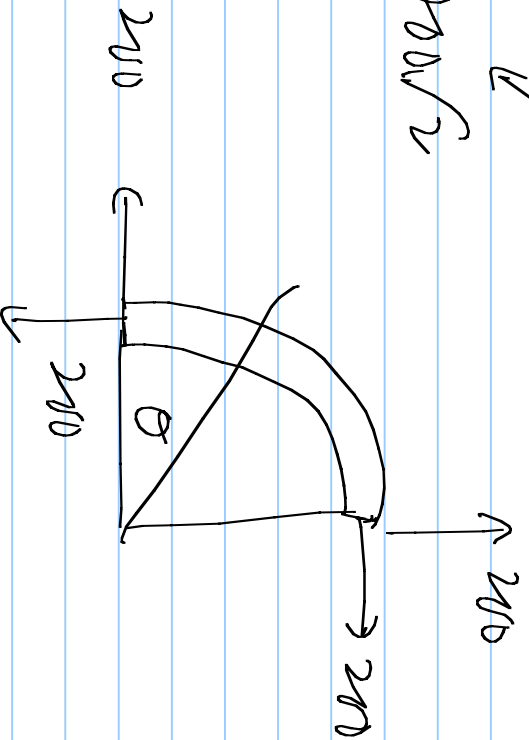
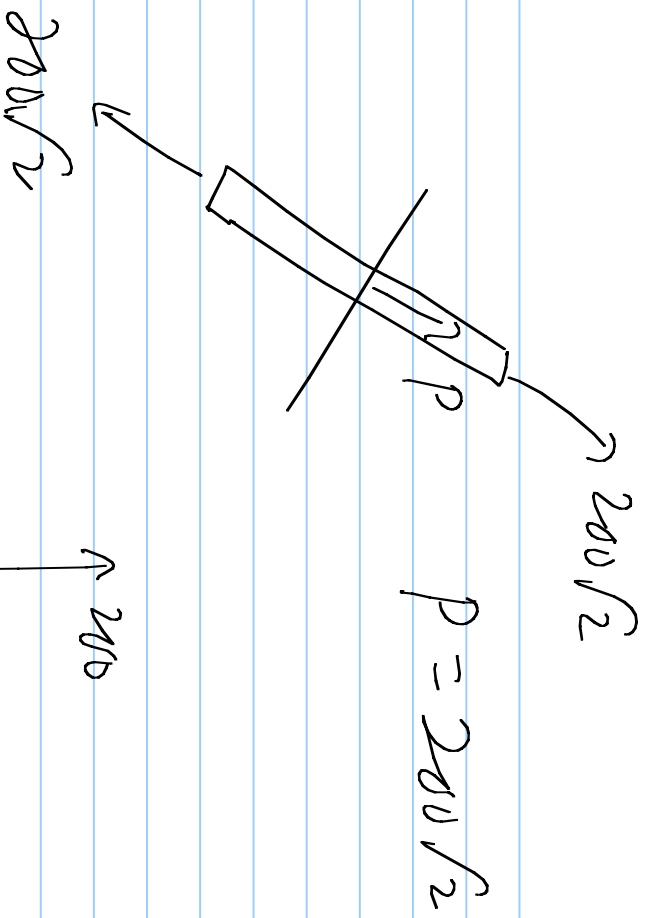
$$A_y = 200 \text{ lbs.}$$

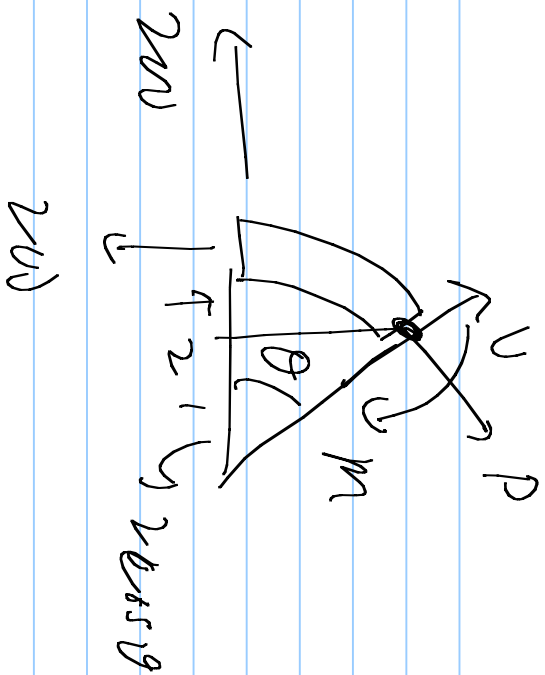
$$\sum F_y = -A_y + B_y = 0 \Rightarrow B_y = 200 \text{ lbs}$$

$$\frac{A_x}{A_y} = \frac{2}{2} \Rightarrow A_x = 200 \text{ lbs}$$

$$\sum F_x = -200 + 100 + B_x = 0$$

$$B_x = 100 \text{ lbs}$$





$$\sum M = -M + (2 - 2 \cos \theta) 200$$

$$- 25 \sin \theta (200) = 0$$

$$M = 400 - 400 [\cos \theta + \sin \theta]$$

$$= 400 - 400 \sqrt{2} \cos(\theta - 45^\circ)$$