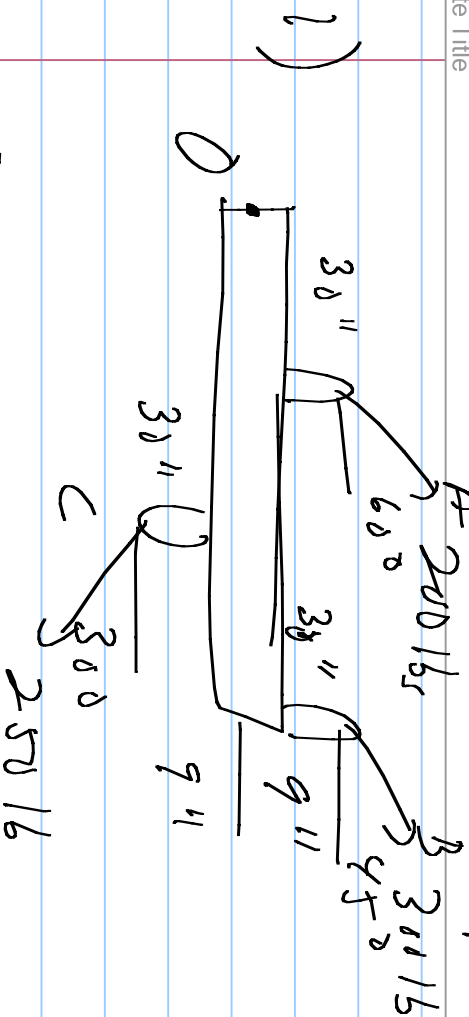


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$$\rightarrow F_A = 200 \cos(60) \hat{i} + 200 \sin(60) \hat{j} = 100 \hat{i} + 100\sqrt{3} \hat{j}$$

$$\rightarrow F_B = 300 \cos(45) \hat{i} + 300 \sin(45) \hat{j} = 150\sqrt{2} \hat{i} + 150\sqrt{2} \hat{j}$$

$$\rightarrow F_C = 250 \cos(30) \hat{i} - 250 \sin(30) \hat{j} = 125\sqrt{3} \hat{i} - 100 \hat{j}$$

$$\rightarrow R = \Sigma F = 528.6 \hat{i} + 285.3 \hat{j}$$

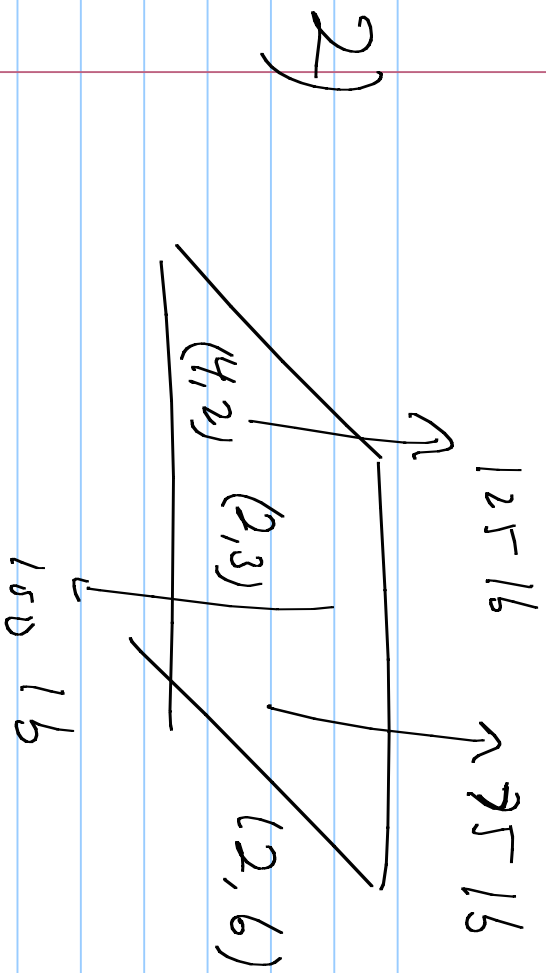
$$M_A = -100 \cdot 9 + 100 \sqrt{3} \cdot 30 = 4296.2 \text{ in}\cdot\text{lbs}$$

$$M_B = -150 \sqrt{2} \cdot 9 + 150 \sqrt{2} \cdot 90 = 17182.7 \text{ in}\cdot\text{lbs}$$

$$M_C = +125 \sqrt{3} \cdot 9 - 100 \cdot 60 = -4051.4 \text{ in}\cdot\text{lbs}$$

$$M_D = 17,427.5 \text{ in}\cdot\text{lbs}$$

$$x = \frac{M_x}{R_y} = 61.1 \text{ in}$$



$$R = 100 \hat{i}$$

$$\vec{M} = (4\hat{i} + 2\hat{j}) \times 125\hat{k}$$

$$+ (2\hat{i} + 3\hat{j}) \times (-100\hat{k})$$

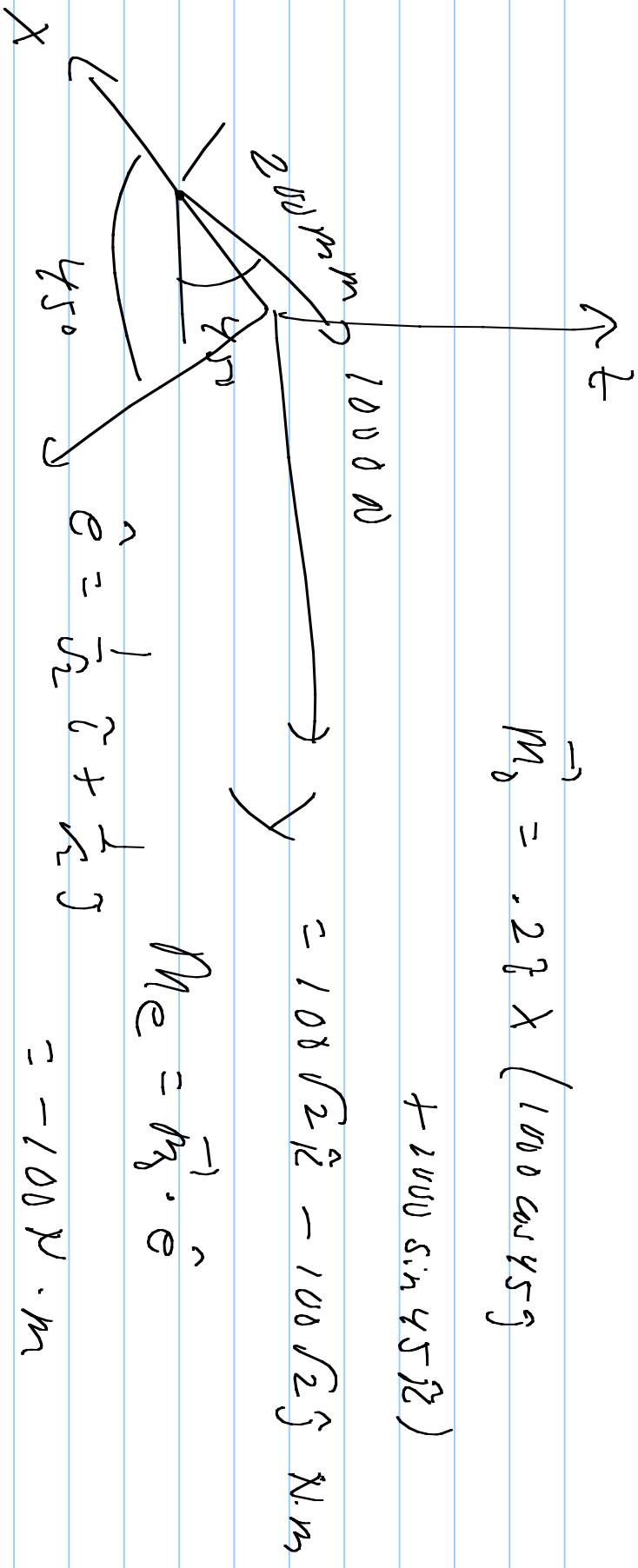
$$+ (2\hat{i} + 6\hat{j}) \times 25\hat{k}$$

$$\vec{M} = -600\hat{j} + 250\hat{k} + 200\hat{j} - 300\hat{i} - 150\hat{j} + 450\hat{k}$$

$$= 400\hat{i} - 550\hat{j} = (x\hat{i} + y\hat{j}) \times 100\hat{k}$$

$$y = 4ft, x = 5.5ft = -100x\hat{j} + 100y\hat{i}$$

3)



$$\vec{M}_g = 1000 \cos 45^\circ \vec{j} + 1000 \sin 45^\circ \vec{i}$$

$$= 1000\sqrt{2} \vec{j} - 1000\sqrt{2} \vec{i} \text{ N.m}$$

$$M_e = \vec{M}_g \cdot \vec{e}$$

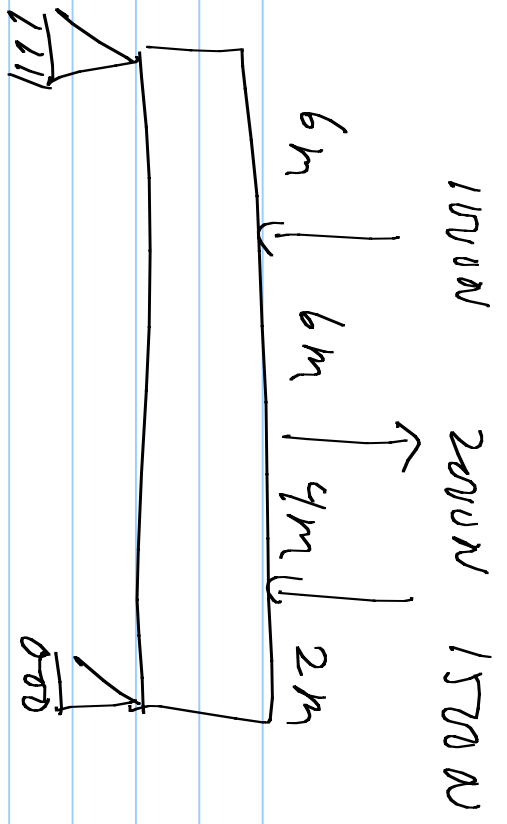
$$= -1000 \text{ N} \cdot \text{m}$$

Chapt 6 Equilibrium of Rigid Bodies.

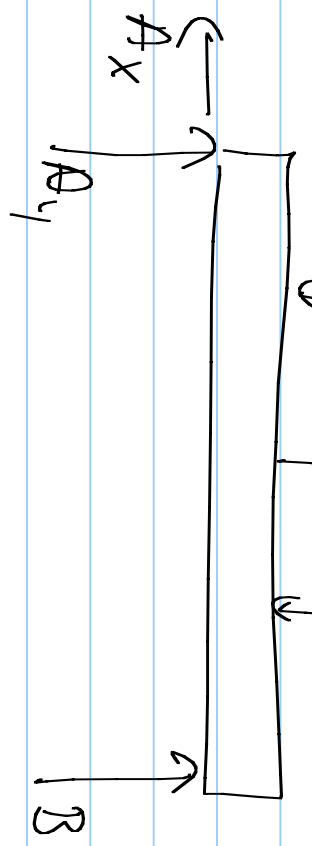
$$\sum \vec{F} = 0, \quad \sum \vec{M} = 0$$

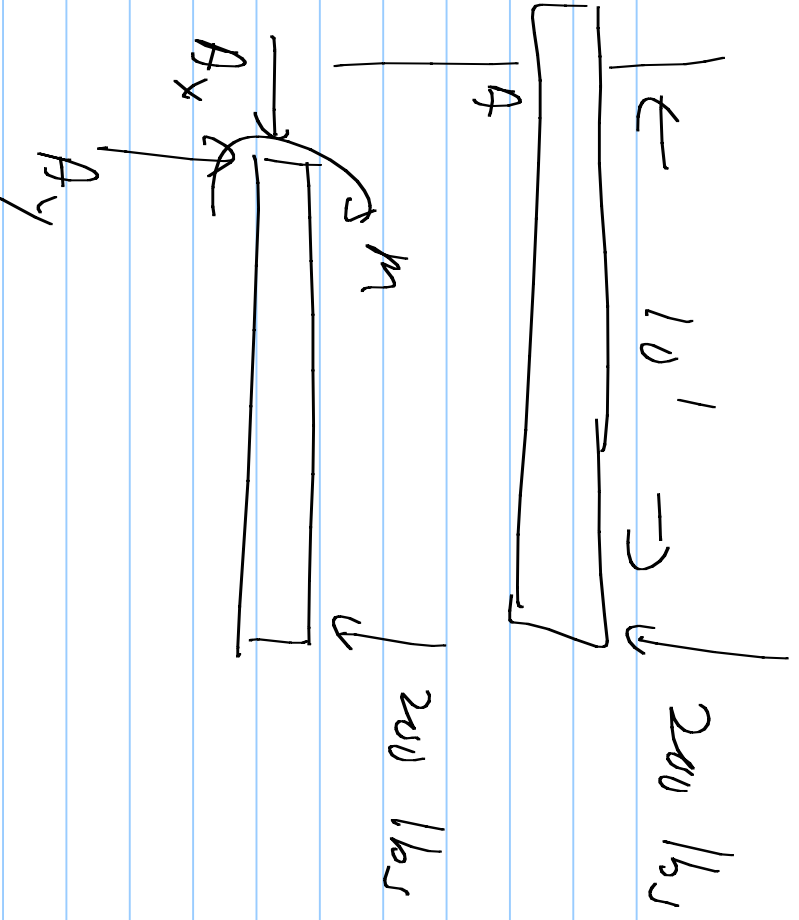
In 2D 3 unknowns

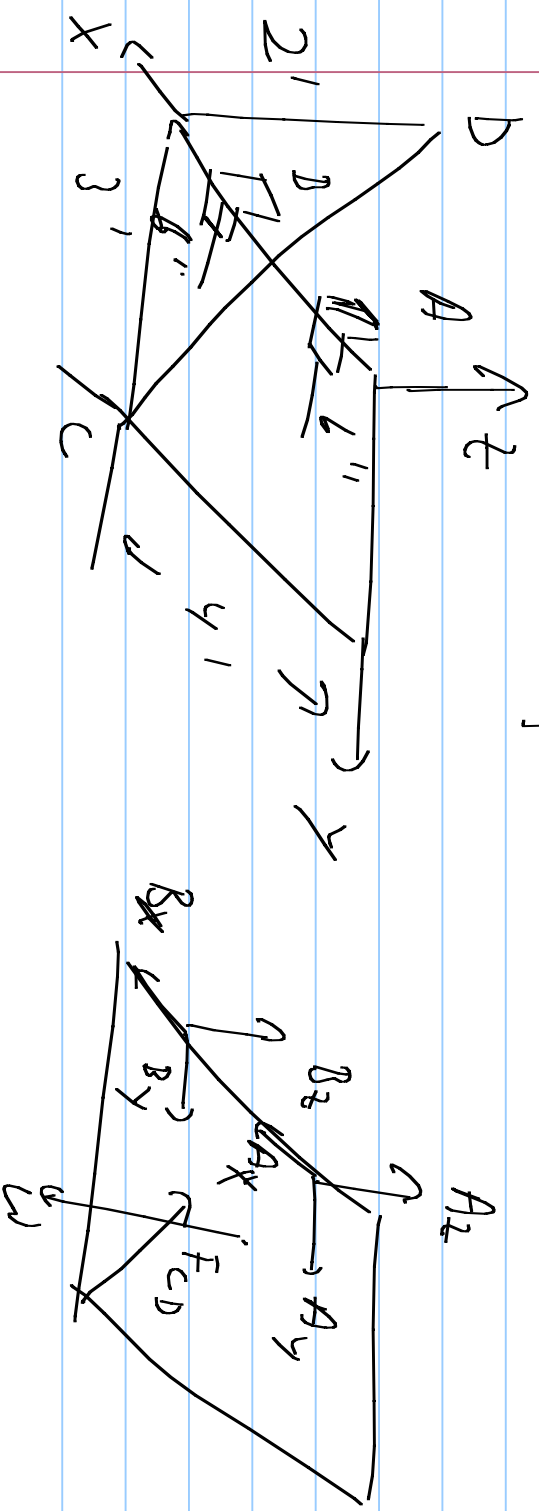
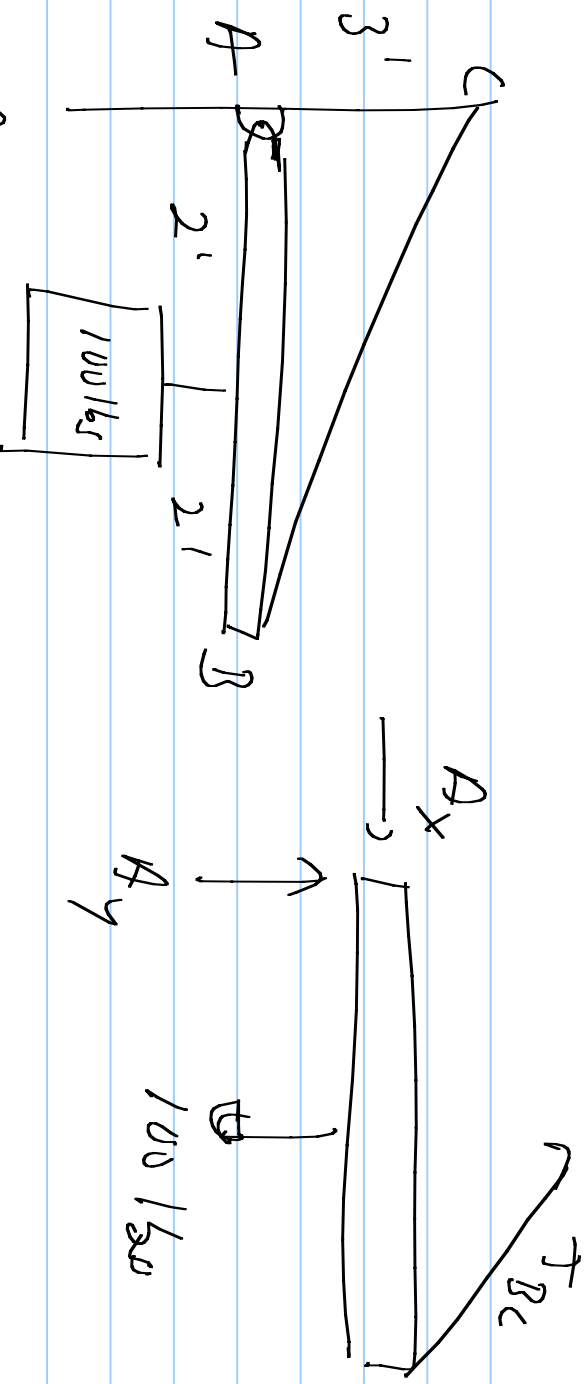
In 3D 6 unknowns

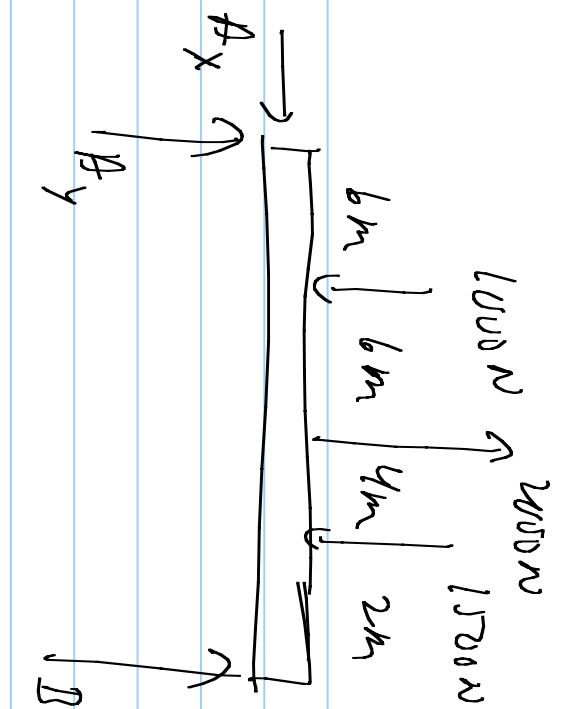


A 1000N 2000N 1500N B









$$\sum F_x = A_x = 0$$

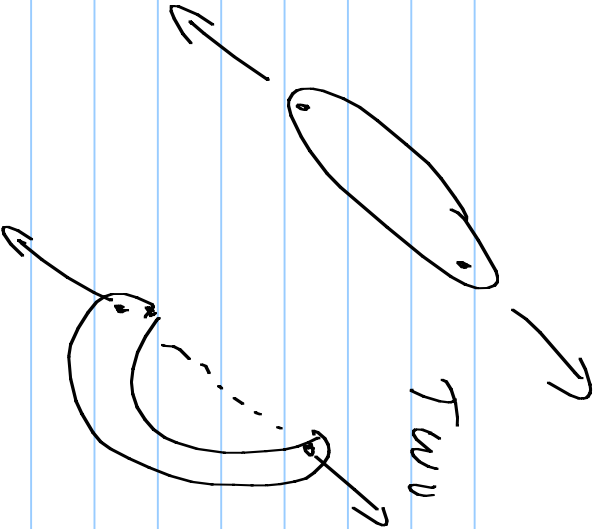
$$\sum M_A = -6000 + 24,000$$

$$-24,000 + 18B = 0$$

$$\sum F_y = A_y - 500 + 333.3 = 0 \quad 18B = 6000$$

$$B = 333.3\text{ N}$$

$$A_y = 166.7\text{ N}$$



Two force body

