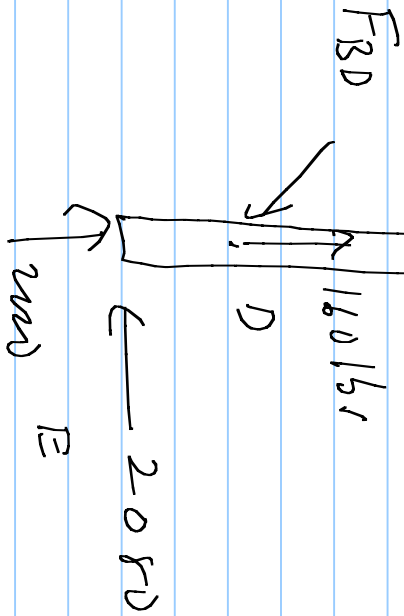




$$\sum M_D = -8(2080) + 8C_x - 2(2080)$$

$$= 0$$

$$C_x = 2600 \text{ lbs}$$



$$\sum F_x = -2080 - 2600 + 2080 + F_{BDx} = 0$$

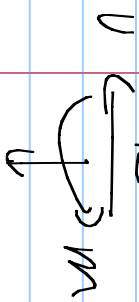
$$F_{BDx} = 2600 \text{ lbs}$$

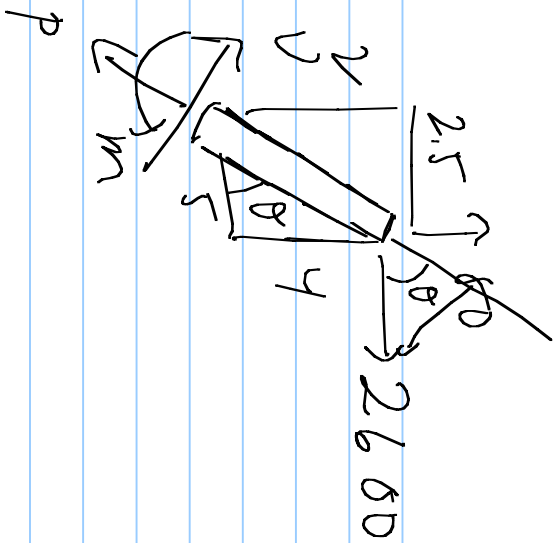
$$P = -80 \text{ lbs} \quad M = -2080 \text{ ft}\cdot\text{lb} \quad F_{BDy} = \frac{4}{5} F_{BDx} = 2080$$

$$\sum F_y = 2000 + 160 - C_y - 2080$$

$$C_y = 80 \text{ lbs}$$

$$V = -520 \text{ lbs}$$





$$\sum F_p = -2600 \cos \theta - 80 \sin \theta + P = 0$$

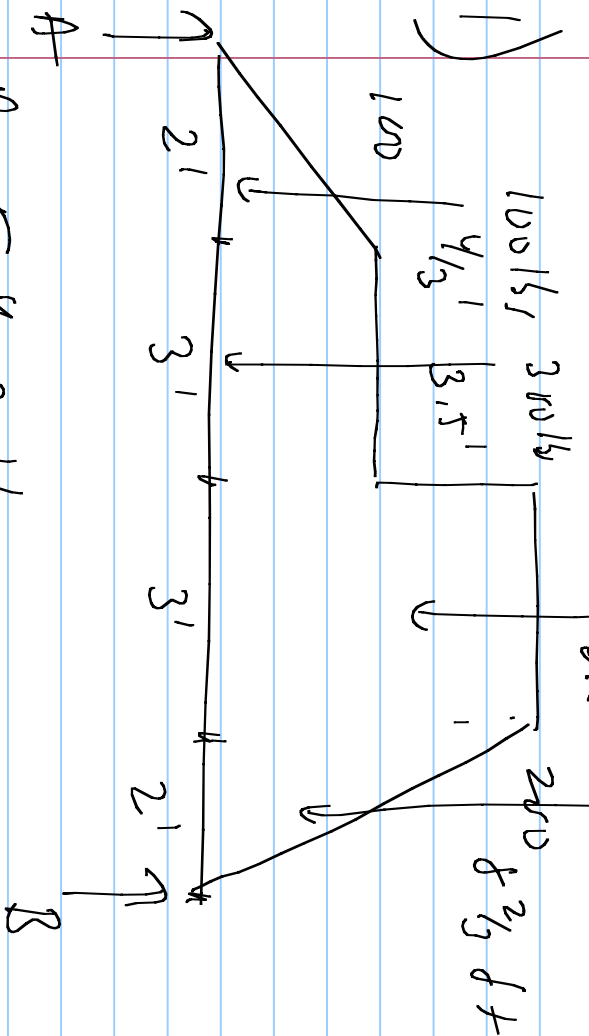
$$P = 2080 \text{ lbs}$$

$$\sum F_v = -2600 \sin \theta + 80 \cos \theta + V = 0$$

$$V = 1562 \text{ lbs}$$

$$M = (1562) \sqrt{4 + 6.25} = 5000 \text{ ft-lbs}$$

Example 4



$$\sum M_A = -\frac{4}{3} \cdot 100 - 3.5 \cdot 300$$

$$-6.5 \cdot 600 - \frac{26}{3} \cdot 200$$

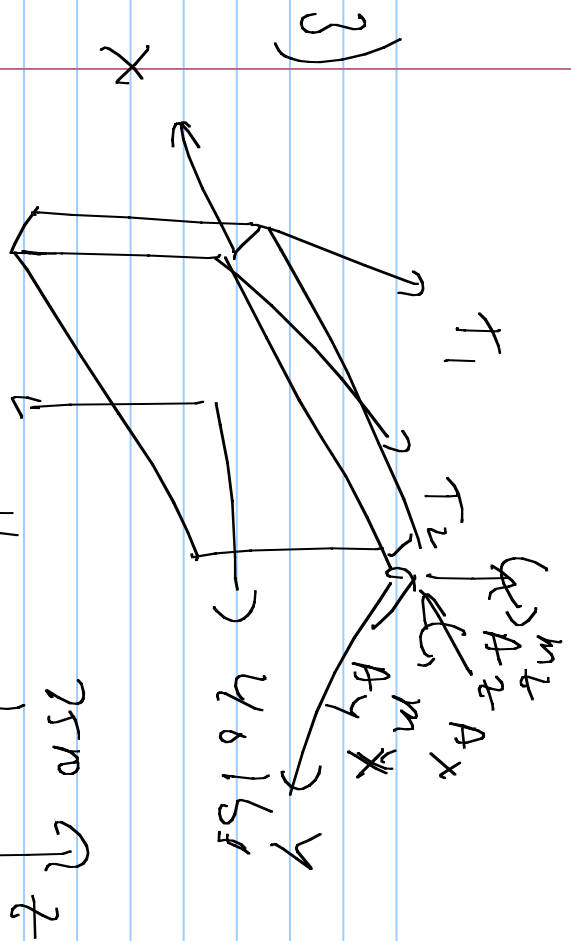
$$+10B = 0$$

$$B = 681.7 \text{ lbs}$$

$$\sum F_y = A - 100 - 300 - 600$$

$$-200 + B = 0$$

$$A = 518.3 \text{ lbs}$$



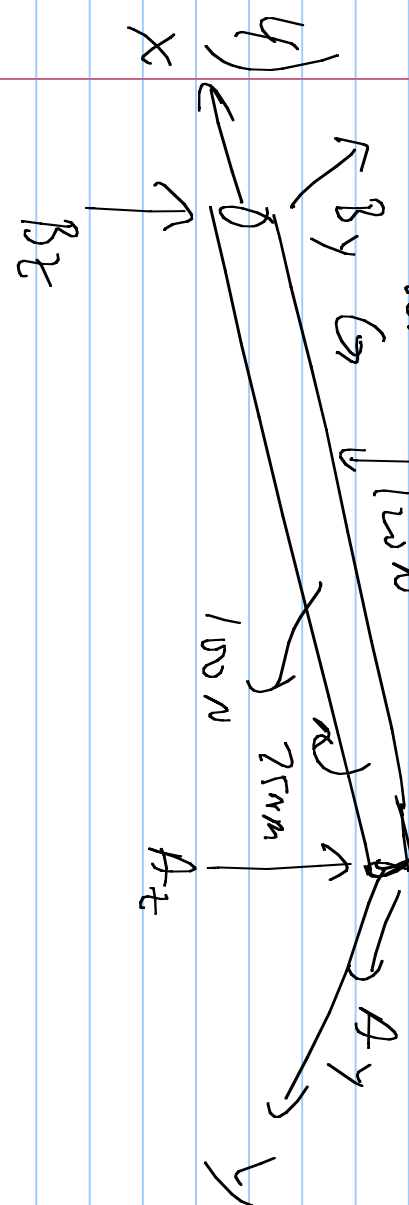
$$\sum M_y = 25 \cdot 1 + 120 \cdot 3$$

$$- 5 \cdot B_z - 25 = 0$$

$$B_z = 22 \text{ N}$$

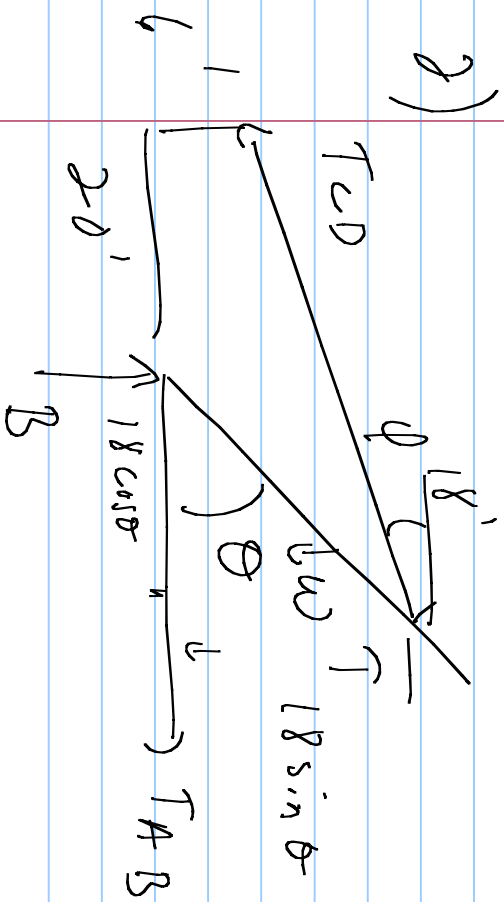
$$\sum F_z = +22 - 120 - 25 + A_z$$

$$= 0 \quad A_z = 123 \text{ N}$$



$$\sum M_z = 100 + 2 \cdot 100 - 5 \cdot B_y = 0 \Rightarrow B_y = 60 \text{ N}$$

$$\sum F_y = -100 + 100 + A_y = 0 \Rightarrow A_y = -40 \text{ N}$$



$$\tan(\theta) = \frac{18 \sin \theta - 6}{20 + 18 \cos \theta}$$

$$\sum M_B = -12 \cos \theta \cdot 6$$

$$T_{CDx} \cdot 18 \sin \theta - T_{CDy} \cdot 18 \cos \theta = 0$$

$$T_{CDx} = T_{CD} \cos \phi \quad T_{CDy} = T_{CD} \sin \phi$$

$$T_{CD} [18 \sin \theta \cos \phi - 18 \cos \theta \sin \phi] = 12 \text{ kN} \cos \theta$$

$$T_{CD} = \frac{12 \text{ kN} \cos \theta}{18 \sin(\theta - \phi)}$$

$$\sum F_x = -T_{CDx} + T_{AB} = 0 \quad \tan \phi = \frac{18 \sin \theta - L}{20 + 18 \cos \theta}$$

$$T_{AB} = \frac{12 \text{ kN} \cos \theta \cos \phi}{18 \sin(\theta - \phi)} = \frac{12 \text{ kN} \cos \theta}{18 [\sin \theta - \cos \theta \tan \phi]}$$

$$T_{AB} = \frac{12W \cos \theta}{18 \left[\sin \theta - \cos \theta - \frac{18 \sin \theta - 4}{20 + 18 \cos \theta} \right]}$$

$$= \frac{12W \cos \theta (20 + 18 \cos \theta)}{18 [20 \sin \theta + 18 \cos \theta \sin \theta - 18 \cos \theta \sin \theta + 4 \cos \theta]}$$

$$= \frac{2W \cos \theta (20 + 18 \cos \theta)}{3 (20 \sin \theta + 6 \cos \theta)}$$