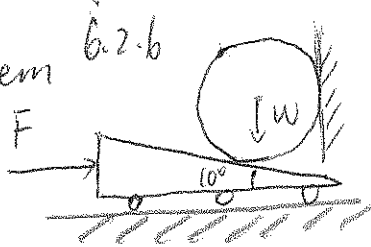
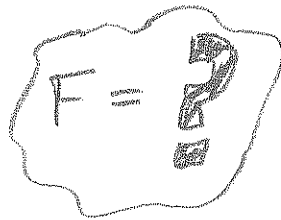


Problem 6.2.b

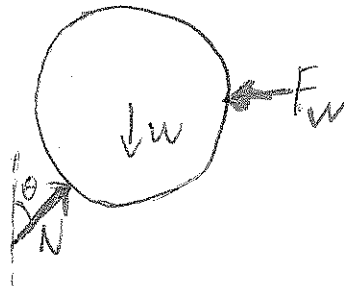


$$W = 500 \text{ N}$$

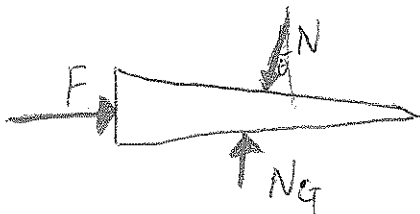
$$\theta = 10^\circ$$



FBD: Sphere



wedge:



$$\text{sphere: } \left\{ \sum \vec{F} = \vec{0} \right\} \cdot \hat{j} \Rightarrow N \cos \theta - W = 0$$

$$\Rightarrow N = \frac{W}{\cos \theta}$$

$$\text{wedge: } \left\{ \sum \vec{F} = \vec{0} \right\} \cdot \hat{i} \Rightarrow F - N \sin \theta = 0$$

$$\Rightarrow F = N \sin \theta = \frac{W}{\cos \theta} \sin \theta = W \tan \theta$$

$$\text{So } F = 500 \text{ N} \cdot \tan(10^\circ) = 88.16 \text{ N}$$