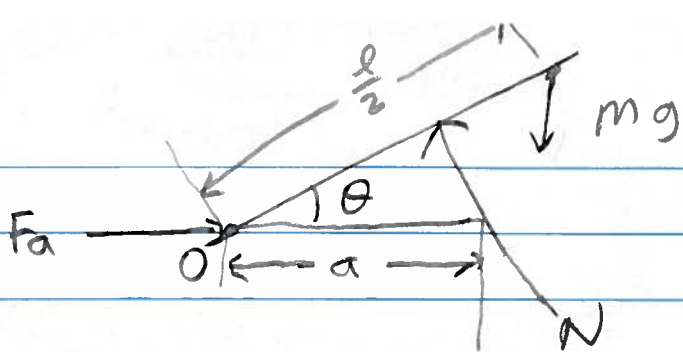
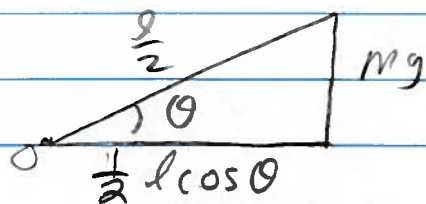
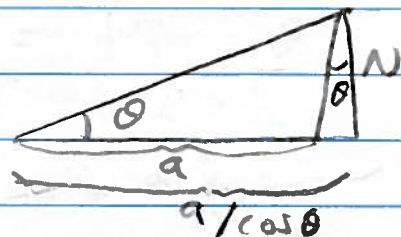


3)



(4)

Mass  
forceNormal  
force

$$\Rightarrow \sum M_O = 0 = N \frac{a}{\cos \theta} - \frac{1}{2} M g l \cos \theta$$

$$\Rightarrow \sum F_y = 0 = N \cos \theta - M g \quad \text{or} \quad N = \frac{M g}{\cos \theta}$$

$$\text{so } \frac{M g a}{\cos^2 \theta} - \frac{1}{2} M g l \cos \theta = 0$$

$$\cos \theta = \sqrt[3]{\frac{2a}{l}}$$

✓