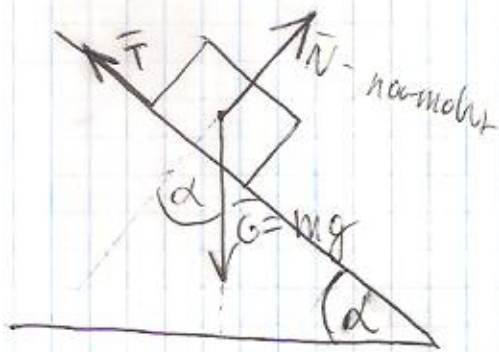


Sliding friction



Known:

m - mass [kg]

α - angle [rad]

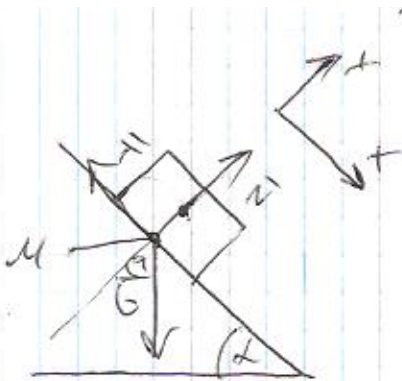
μ - sliding friction factor [-]

g - gravity acceleration [m/s²]

T - sliding friction force [N]

Find:

α_{\max} in equilibrium position [N]



$$\underline{\sum F_{ix} = 0}$$

$$-T + G \cdot \sin \alpha = 0 \rightarrow T = G \cdot \sin \alpha$$

$$\underline{\sum F_{iy} = 0}$$

$$N - G \cdot \cos \alpha = 0 \rightarrow N = G \cdot \cos \alpha$$

$$T \leq \mu \cdot N$$

$$G \cdot \sin \alpha \leq \mu \cdot G \cdot \cos \alpha \quad /: G$$

$$\sin \alpha \leq \mu \cdot \cos \alpha \quad /: \cos \alpha$$

$$\frac{\sin \alpha}{\cos \alpha} \leq \mu$$

$$\tan \alpha \leq \mu$$

$$\underline{\alpha \leq \arctan \mu}$$