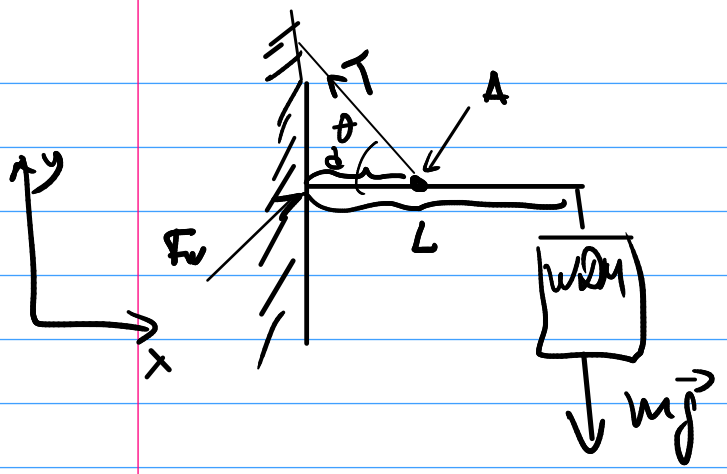


$$T = \frac{mg\,L}{d\cdot\sin\theta} > mg$$

$$\sum \vec{F}_i = 0 = \vec{F}_w + \vec{T} + m\vec{g}$$

$$\sum \vec{\tau}_i = 0$$

W.R.A: $\sum \vec{\tau}_i = \vec{\tau}_{F_w} + \cancel{\vec{\tau}_T}^{\,0} + \vec{\tau}_g$

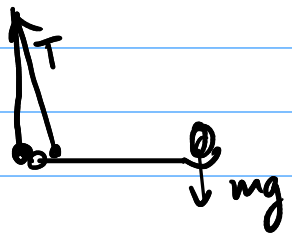
x: $\sum F_x = 0 = F_{wx} + T_x + mg_x = F_{wx} - T\cdot\cos\theta + 0$

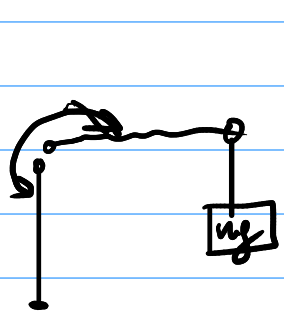
y: $\sum F_y = 0 = F_{wy} + T_y + (-mg)$

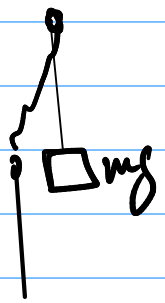
$$F_{wx} = T\cos\theta = \frac{mgL}{d}\frac{\cos\theta}{\sin\theta}$$

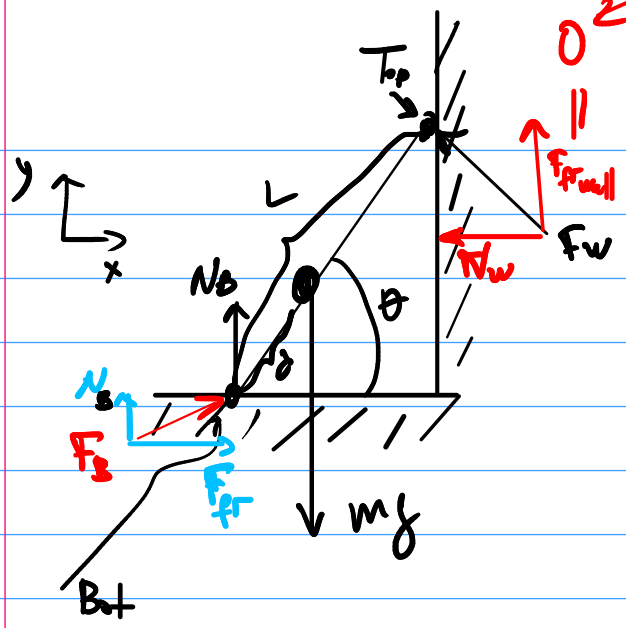
$$F_{wy} = mg - T_y = mg - T\cdot\sin\theta = mg - \frac{mgL}{d}\frac{\cancel{\sin\theta}}{\cancel{\sin\theta}}$$

$$F_{wy} = mg\left(1 - \frac{L}{d}\right) < 0$$









Forced

$0 = \sum \vec{\tau}_i = \vec{\tau}_g + \vec{\tau}_B + \vec{\tau}_w$

$\sum \vec{F}_i = 0 = F_B + F_g + F_w$

x: $\sum F_x = 0 + N_{w_x} + F_{fr_x} =$

$= N_{w_x} + F_{fr} = 0$

y: $0 = N_B - mg$

$\boxed{N_B = mg}$

W.r.t. B: $\sum \vec{\tau}_i = 0 = mg \cdot d \cos\theta_{\hat{cw}} + L \cdot N_w \cdot \sin\theta_{\hat{ccw}}$