$$\begin{aligned} x: \quad T - m_A g \sin(\theta) - \mu_k F_n &= m_A a_x \\ y: \quad F_n - m_A g \cos(\theta) &= 0 \end{aligned}$$

$$F_n = m_A g \cos(\theta)$$

$$T - m_A g \sin(\theta) - \mu_k m_A g \cos(\theta) = m_A a_x$$

$$\begin{aligned} x: \quad 0 &= 0 \\ y: \quad T - m_B g &= -m_B a_y \end{aligned}$$

$$T = m_B g - m_B a_y$$

$$m_B g - m_B a - m_A g \sin(\theta) - \mu_k m_A g \cos(\theta) = m_A a$$