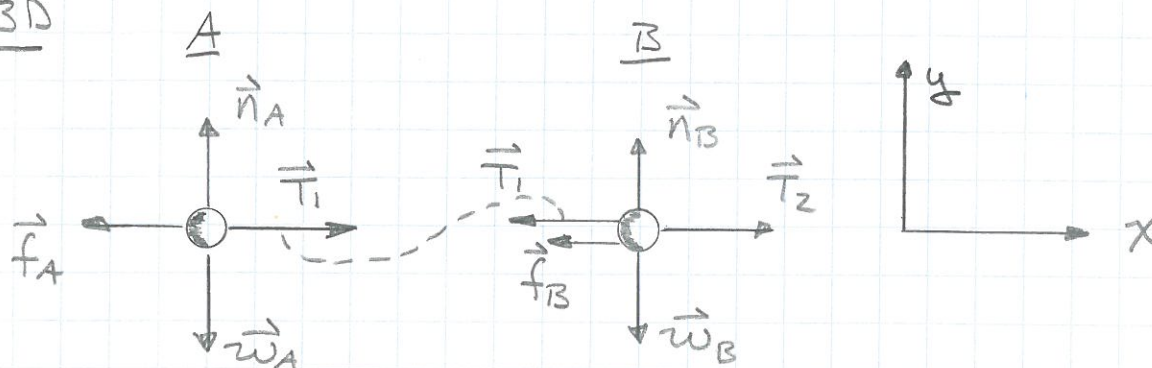


Find: Tension in rope 2, T_2

FBD



NOTE: $a_{xA} = a_{xB} = a$ (Constraint)

Sled A: $\Sigma F_x = -f_A + T_1 = m_A a$

$$\Sigma F_y = n_A - w_A = m_A a_y = 0 \Rightarrow n_A = m_A g$$

So: $f_A = \mu_k n_A = \mu_k m_A g$

and, $-\mu_k m_A g + T_1 = m_A a$ (1)

Sled B: $\Sigma F_x = -T_1 + T_2 - f_B = m_B a$

$$\Sigma F_y = n_B - w_B = m_B a_y = 0 \Rightarrow n_B = m_B g$$

So: $f_B = \mu_k n_B = \mu_k m_B g$

and, $-T_1 + T_2 - \mu_k m_B g = m_B a$ (2)

From eqn (1):

$$a = -\mu_k g + \frac{T_1}{m_A} = 0.52 \text{ m/s}^2$$

So, eqn (2) gives:

WB7-2
2

$$T_2 = m_B a + M_R m_B g + T_1$$

$$\underline{T_2 = 270 \text{ N}}$$