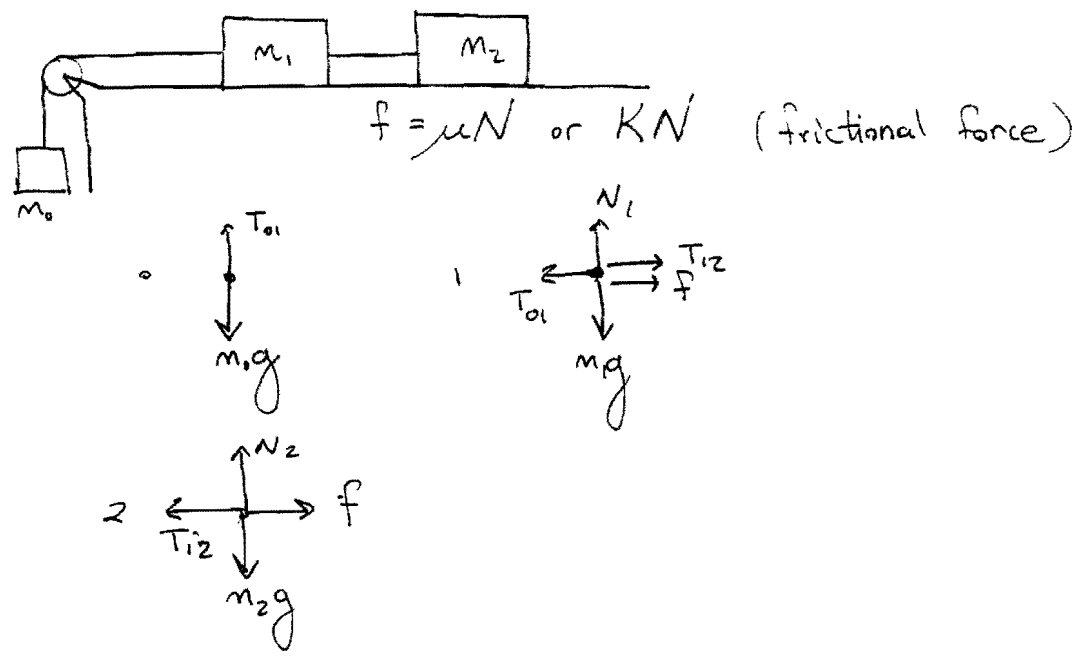


1.66) Dis. GA 4.1



$$\begin{aligned} \sum F_x^0 &= 0 & \sum F_y^0 &= m_0 g - T_{01} = m_0 a_0 \\ \sum F_x^1 &= T_{01} - T_{12} - f_1 = m_1 a_1 & \sum F_y^1 &= N_1 - m_1 g = 0 \\ \sum F_x^2 &= T_{12} - f_2 = m_2 a_2 & \sum F_y^2 &= N_2 - m_2 g = 0 \end{aligned}$$

by continuity  $a_0 = a_1 = a_2 = w$

our equations are  $m_0 g - T_{01} = m_0 w$

using  $f_2 = KN_2 = Km_2 g$   $T_{01} - T_{12} - Km_1 g = m_1 w$

$f_1 = KN_1 = Km_1 g$   $T_{12} - Km_2 g = m_2 w$

$$\begin{aligned} m_0 g - T_{12} - Km_1 g - m_1 w &= m_0 w \\ T_{12} - Km_2 g &= m_2 w \end{aligned}$$

$$\frac{m_0 g - Kg(m_1 + m_2)}{m_1 + m_2 + m_0} = w$$

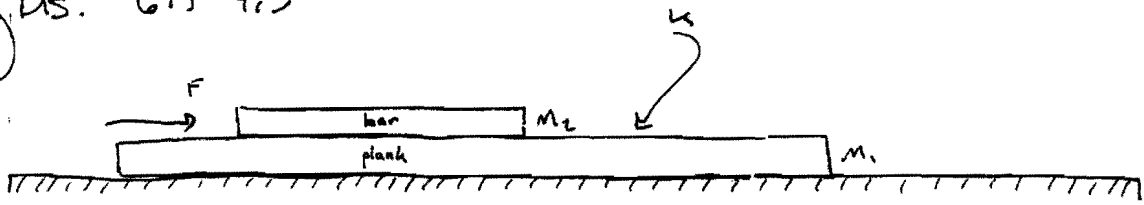
(2)

1.60) Dis GA 4.2

$$\begin{aligned} T_{12} &= m_2 w + k m_2 g \\ &= \frac{m_0 m_2 g - k m_2 (m_1 + m_2) g}{m_0 + m_1 + m_2} + \frac{k g [m_2 m_0 + m_2 m_1 + m_2 m_2]}{m_1 + m_0 + m_2} \\ &= \frac{[m_0 m_2 + k m_0 m_2] g}{m_0 + m_1 + m_2} \end{aligned}$$

$$T_{12} = \frac{m_0 m_2 [1+k] g}{m_0 + m_1 + m_2}$$

1.65) D's. CA 4.3



$$F = at$$

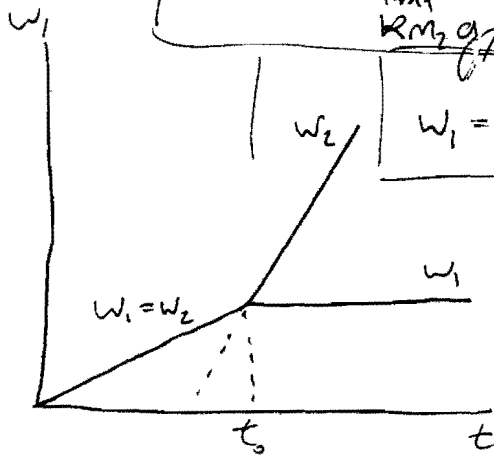
$$\left. \begin{aligned} \sum F &= F = (m_1 + m_2)w \\ \sum F_1^x &= F - km_2g = m_2w_2 \\ \sum F_2^x &= km_2g = m_1w_1 \end{aligned} \right\} \text{if static friction}$$

$w_1 = w_2$

$$w_1 = \frac{a}{m_1 + m_2} t \quad t < t_0$$

at  $t \geq t_0$   $w_1 \neq w_2$

$$\frac{a}{m_2} t - \frac{km_2g}{m_2} = w_2 \quad \text{at } t = t_0$$



$$w_1 = \frac{km_2g}{m_1}$$

$$t_0 : \frac{a}{m_2} t_0 = kg \left( \frac{m_1 + m_2}{m_1} \right)$$

$$\Rightarrow t_0 = \frac{kg m_2}{a m_1} (m_1 + m_2)$$