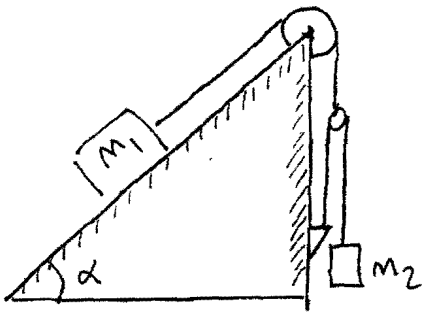
1.72) Dis 6A S.1



$\frac{m_2}{m_1} = \eta$

$T_1 = 2T_2$

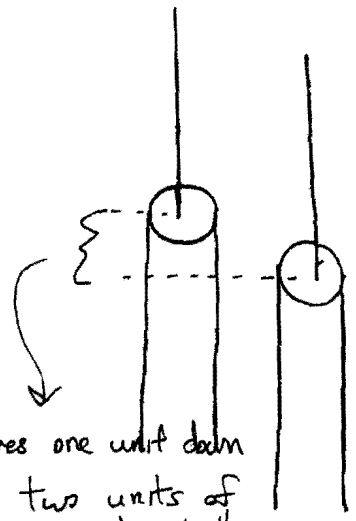
$$\sum F_1 = m_1 g \sin\alpha - T_1 = m_1 a_1$$

$$\sum F_2 = T_2 - m_2 g = m_2 a_2$$

$$m_1 g \sin\alpha - m_1 a_1 = 2 m_2 a_2 + 2 m_2 g$$

$$g\sin\alpha - 2\left(\frac{m_2}{m_1}\right)g = a_1 + 2\frac{m_2}{m_1}a_2$$

$$\boxed{\frac{2g[\sin\alpha - 2\eta]}{1 + 4\eta} = a_2}$$

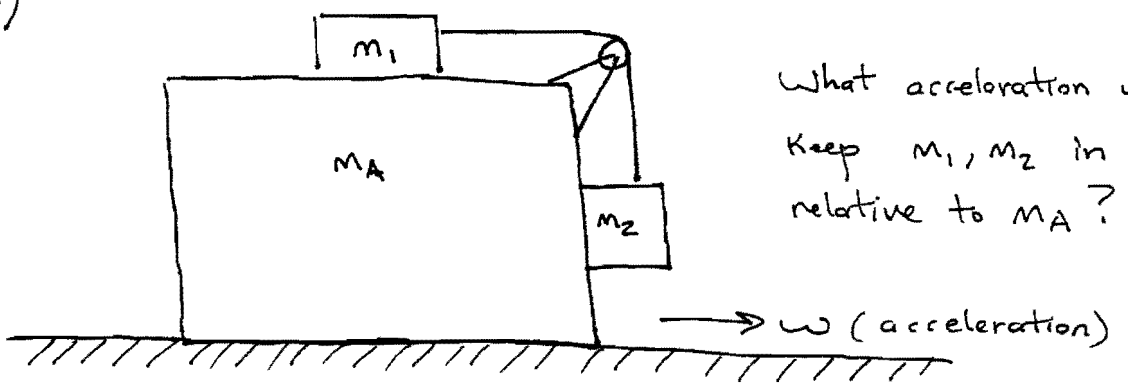


moves one unit down but two units of rope on the bottom

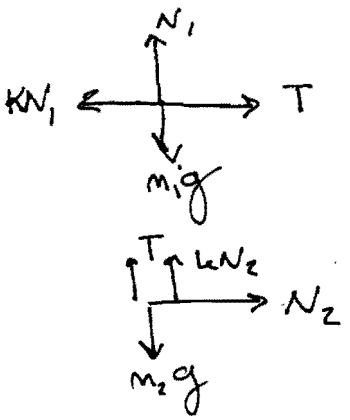
$$2\Delta x_t = \Delta x_b$$

$$\Rightarrow a_1 = a_2/2$$

1.79) Dis GA 5.2



What acceleration will keep m_1, m_2 in place relative to m_A?



$$m_2 g = T + KN_2$$

$$T - Km_1 g = m_1 \omega$$

$$N_2 = m_2 \omega$$

$$m_2 g = m_1 \omega + Km_2 g + Km_2 \omega$$

$$\Rightarrow \boxed{\omega = g\left[\frac{m_2 - Km_1}{m_1 + Km_2}\right]}$$

if $m_1 = m_2$ $\boxed{\omega = g\left(\frac{1-K}{1+K}\right)}$