



(a) Motion impends up the incline

$$\begin{cases} \sum F_x = 0: -\mu_s N - m_1 g \sin 20^\circ - m_2 g \sin 20^\circ + m_2 g = 0 \\ \sum F_y = 0: N - m_1 g \cos 20^\circ - m_2 g \cos 20^\circ = 0 \end{cases}$$

Solving,  $m_2 = 1.364 m_1$

(b) Motion impends down the incline:

$$\begin{cases} \sum F_x = 0: \mu_s N - (m_1 + m_2) g \sin 20^\circ + m_2 g = 0 \\ \sum F_y = 0: \text{(Does not change)} \end{cases}$$

Solving,  $m_2 = 0.1199 m_1$

So  $\underline{0.1199 m_1 \leq m_2 \leq 1.364 m_1}$