

10.

力-y 平衡. $T_L \sin 30^\circ = T_R \sin 60^\circ$

$\sqrt{3} T_R = T_L$

$T_L \cos 30^\circ + T_R \cos 60^\circ = mg$

$\frac{3}{2} T_R + \frac{1}{2} T_R = mg \therefore 2 T_R = mg$

正方向 由平衡条件可得.

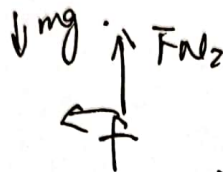
$(4-x) \cdot T_R \cdot \frac{1}{2} = 10 \cdot \frac{\sqrt{3}}{2}$

$\therefore (4-x) \cdot \frac{1}{2} = \frac{3}{2} \cdot 10$

$\therefore 2x = \frac{19}{4} \therefore x = \frac{19}{8} \text{ m}$

11. 由受力分析.

F_{N1}



由几何关系得: $\sin \theta = \frac{1}{2}$

有 $f = F_{N1}$

$mg = F_{N2}$

$mg \sin \theta = F_{N1} \cdot L \cdot \cos \theta$

则 $\mu = \frac{f}{F_{N2}} = \frac{f}{mg} = \frac{d \sin \theta}{L \cos \theta} = \frac{0.948 \text{ m}}{2 \text{ m}} \approx 0.22$

25.

a. $\frac{F_A}{A_A} = E \cdot \frac{\Delta L}{L}$

$\frac{F_A}{E_A A_A} = \frac{F_B}{E_B A_B}$

$\frac{F_A}{F_B} = 4.84$

$\therefore \frac{F_A}{W} = 0.83 \quad \frac{F_B}{W} = 0.17$

c. $F_A dA = F_B dB \quad \frac{dA}{dB} = \frac{1}{4.84}$

28.

力-y 平衡. $F \sin \theta = N$

$m = \frac{4.2}{8} = \frac{21}{40}$

$F \cos \theta = mg$

$\therefore F = \frac{mg}{\cos \theta} = 2.88 \text{ N}$

$N = 1.51 \text{ N}$

38. 临界状态 $\alpha = 7.0^\circ$

平衡条件.

$G = N \cos 7.0^\circ + F_N$

$f = N \sin 7.0^\circ$

$\mu = \frac{f}{F_N}$

$\frac{f}{F_N} + F_N = G$

$\therefore \mu = 0.64$

正方向有

$G = 25 \text{ kg} \cdot 9.8 \text{ m/s}^2$

$= 245 \text{ N} \cdot \frac{3.05}{\sin 7.0^\circ}$

$N = 246.18 \text{ N}$

$f = 231.33$

$F_N = 260.8 \text{ N}$



40.

$$a. \chi_{com} = \frac{\sum x_i m_i}{\sum m_i} = 2.$$

$$b. y_{com} = \frac{\sum y_i m_i}{m_i} = 4$$

$$c. \bar{x}_{coq} = \frac{\sum x_i m_i g_i}{\sum m_i g_i} = 1.974.$$

$$d. \bar{y}_{coq} = \frac{\sum y_i m_i g_i}{\sum m_i g_i} = 3.93m.$$

