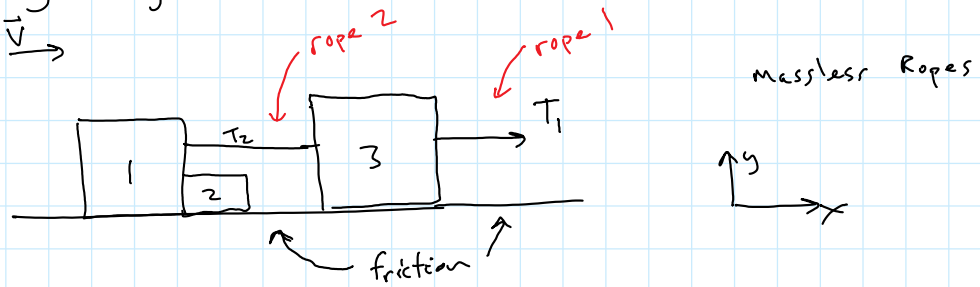
Phy 2A Review 4/28

Friday, April 28, 2017 10:05 AM

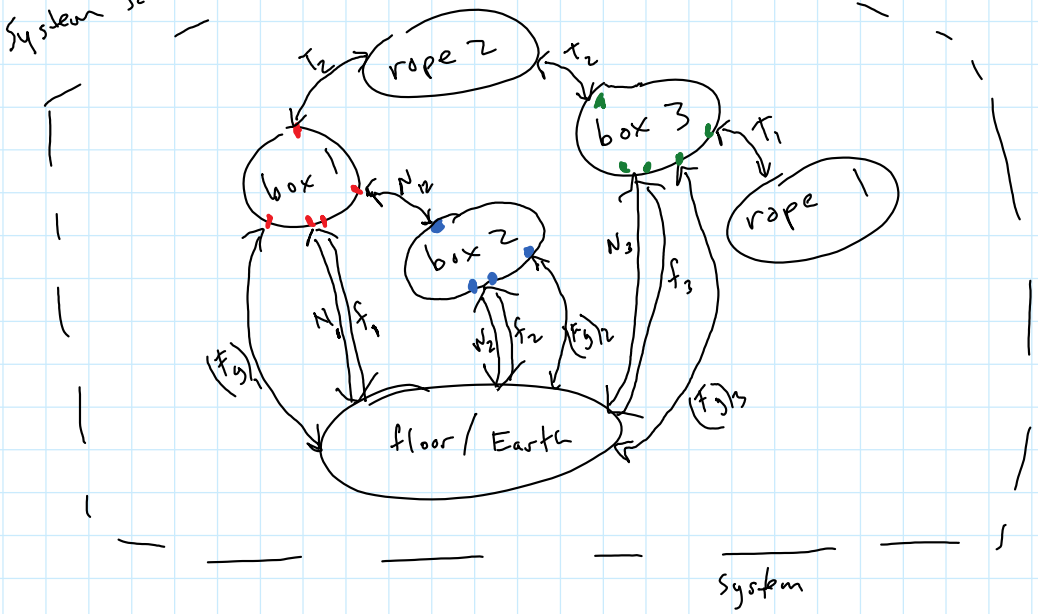
Forces

System Schema

Free body diagrams

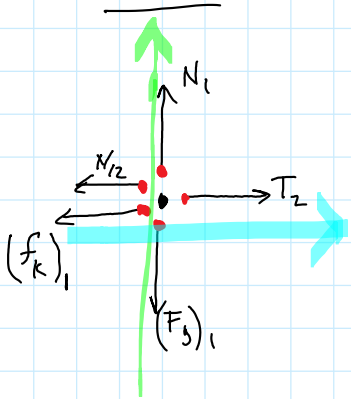


System Schema

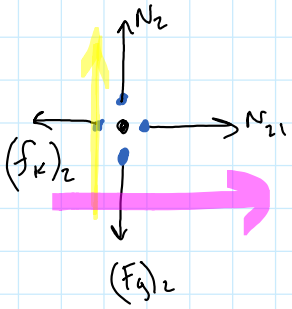


Free body diagrams

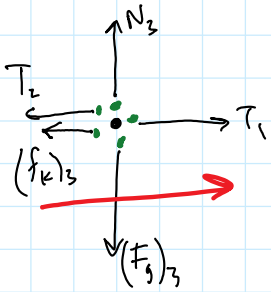
box 1



box 2



box 3



$(F_g)_1 = m_1 g$

$|\vec{N}_1| = |(\vec{F}_g)_1|$

$\Sigma \vec{F} = m\vec{a}$

use components

For box 1

$\Sigma F_x = m a_x \quad \rightarrow +$

$\Sigma F_x = m_1 a_x \quad \rightarrow +$

$T_2 - N_{12} - (f_k)_1 = m_1 a$

$\Sigma F_y = m a_y \quad \uparrow +$

$\Sigma F_y = m_1 \cancel{a_y}^{\,0} \quad \uparrow +$

Not moving in y-direction so, $a_y = 0$

$\Sigma F_y = 0$

$N_1 - (F_g)_1 = 0$

$N_1 = (F_g)_1$

$N_1 = m_1 g$

Now, For box 2

$\Sigma F_x = m_2 a_x \quad \rightarrow +$

$\Sigma F_x = m_2 a$

$N_{21} - (f_k)_2 = m_2 a$

$\Sigma F_y = m_2 \cancel{a_y}^{\,0} \quad \uparrow +$

$\Sigma F_y = 0$

$N_2 - (F_g)_2 = 0$

$N_2 = (F_g)_2$

$N_2 = m_2 g$

Now, box 3

$\Sigma F_x = m_3 a$

$T_1 - T_2 - (f_k)_3 = m_3 a$

$\Sigma F_y = 0$

$N_3 - (F_g)_3 = 0$

$N_3 = (F_g)_2$

$N_3 = m_3 g$