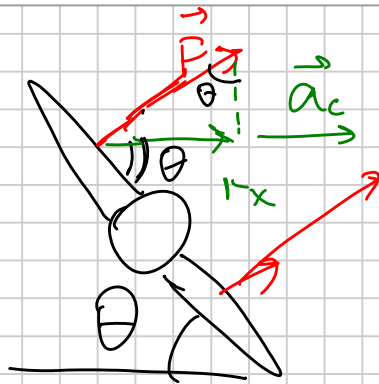


Review for Midterm 1.

Note Title

9/30/2011

EX

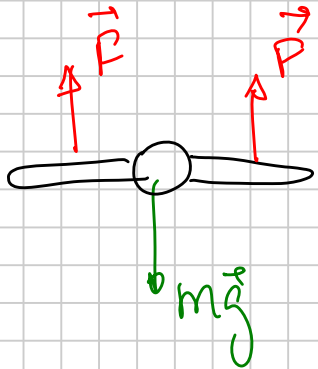


$$v = 480 \text{ km/h}$$

$$\theta = 40^\circ$$

$R = ?$

$$a_c = \frac{v^2}{R}$$



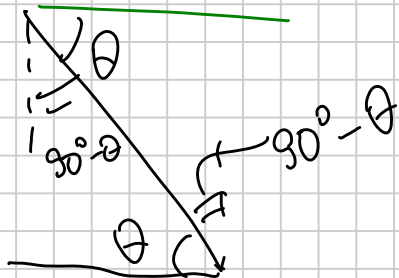
$$F_x = ma_c$$

$$F \sin \theta = m \frac{v^2}{R}$$

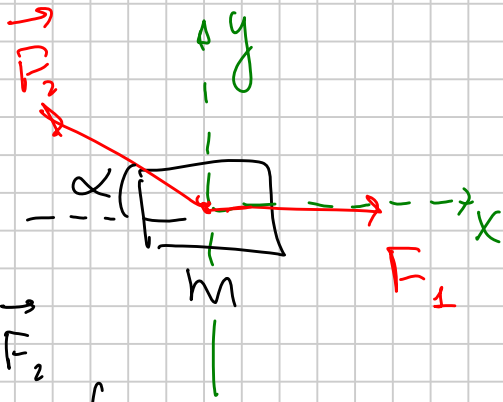
$$F = mg$$

$$\cancel{mg} \sin \theta = \cancel{m} \frac{v^2}{R}$$

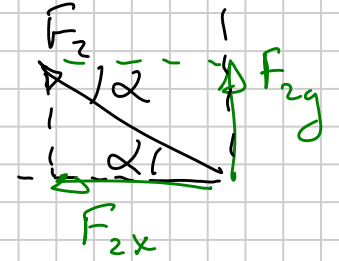
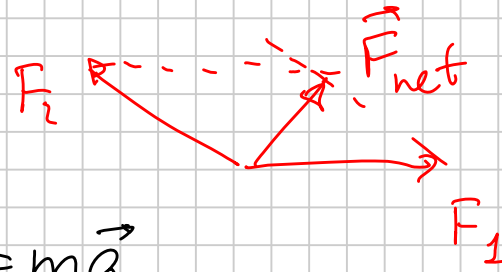
$$\Rightarrow R = \frac{v^2}{g \sin \theta}$$



EX:



$\vec{a} = ?$



$$\vec{F}_{net} = \vec{F}_1 + \vec{F}_2$$

$$\vec{F}_{net} = m\vec{a}$$

$$\begin{cases} x: & F_{netx} = F_{1x} + F_{2x} \\ y: & F_{nety} = F_{1y} + F_{2y} \end{cases}$$

$$F_{1x} = F_1$$

$$F_{2x} = -F_2 \cos \alpha$$

$$F_{1y} = 0$$

$$F_{2y} = F_2 \sin \alpha$$

$$\begin{cases} F_{netx} = F_1 - F_2 \cos \alpha \\ F_{nety} = 0 + F_2 \sin \alpha \end{cases}$$

$$\vec{F}_{net} = F_{netx} \cdot \vec{i} + F_{nety} \cdot \vec{j}$$

$$|\vec{F}_{net}| = \sqrt{F_{netx}^2 + F_{nety}^2}$$

$$\vec{a} = \frac{\vec{F}_{net}}{m} = \frac{F_{netx}}{m} \cdot \vec{i} + \frac{F_{nety}}{m} \cdot \vec{j}$$

a_x a_y

$$|a| = \sqrt{a_x^2 + a_y^2}$$