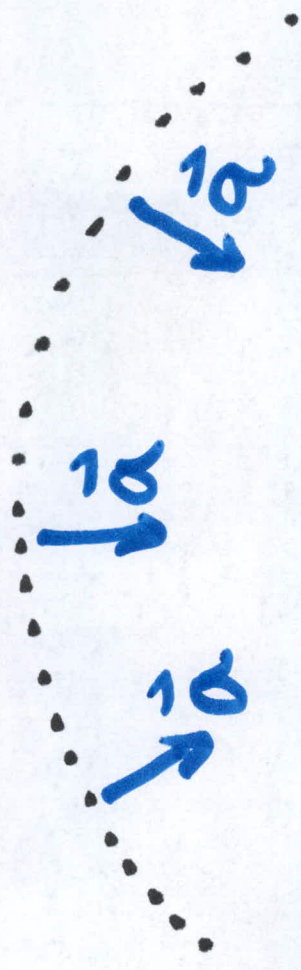
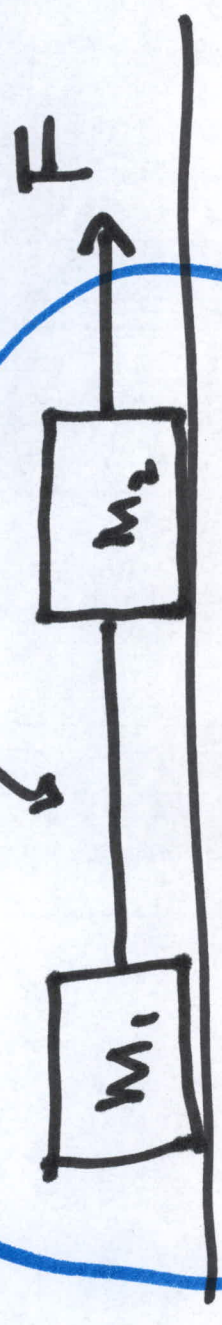


- Circular motion

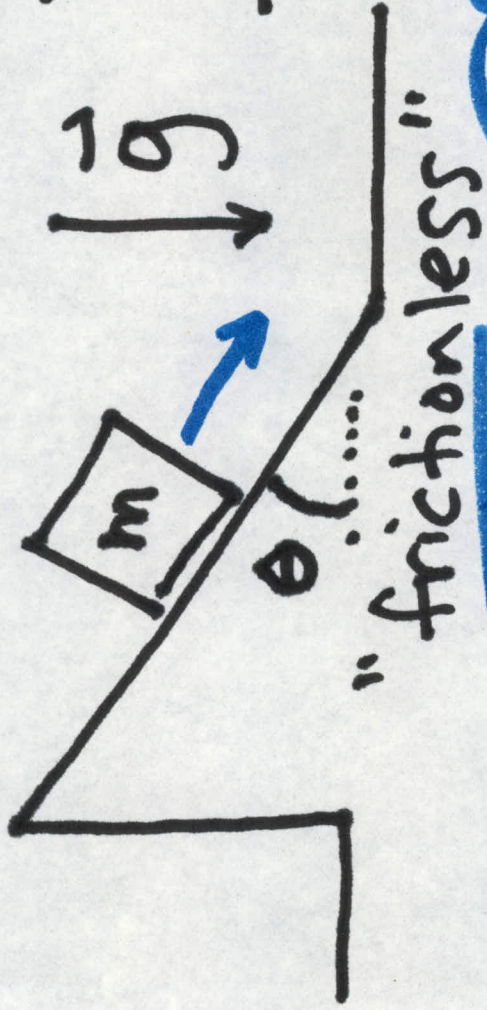


- light, inextensible string



$m_1 \ll m_2$        $a_1 \equiv a_2$





- what is the acceleration?  $\vec{a}$

- what is the contact

force?  $\vec{N}$

$|\vec{F}_f| < |m\vec{g}|$

guess  $a = g \cdot f(\theta)$

extreme cases:  $\theta = \frac{\pi}{2}$

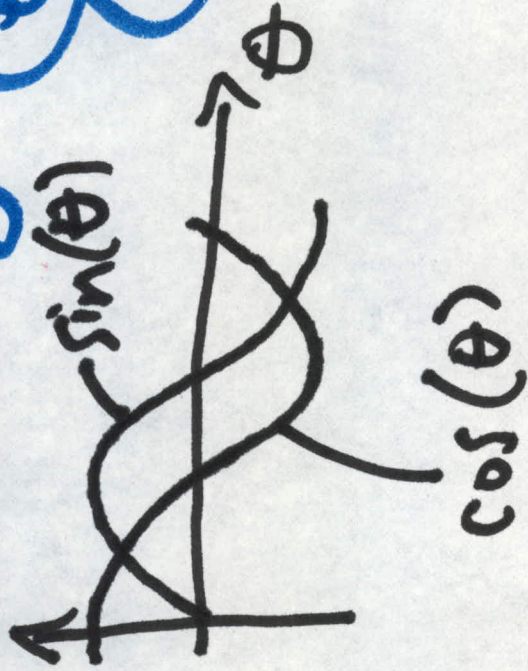
$\theta = 0$

$|\vec{a}| = |\vec{g}|$

$|\vec{a}| = 0$

$|\vec{N}| = 0$

$|\vec{N}| = |m\vec{g}|$



$\sin \theta$  and  $\tan \frac{\theta}{2}$





Free-body diagrams:

"frictionless": Contact force

is Normal.

(perpendicular to surface)

$$|\vec{a}| = |\vec{g}| \sin \theta$$

$$|\vec{ma}| = |\vec{mg}| \sin \theta$$

$$|\vec{N}| = |\vec{mg}| \cos \theta$$

$$\vec{mg} + \vec{N} = \vec{ma}$$

