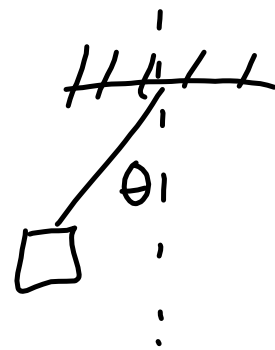
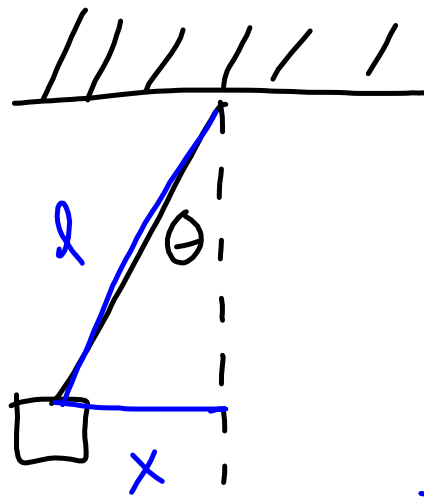


LAB - FLYING PIGS

- Determine the angle the pig makes with the vertical with two different methods.



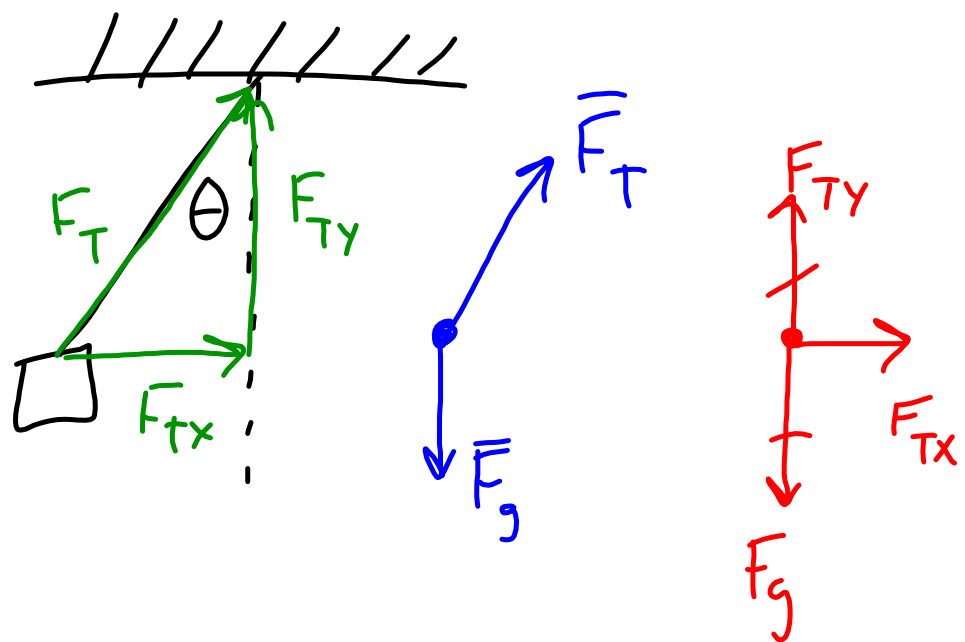
1) Geometry



$$\sin \theta = \frac{x}{l}$$

$$\theta = \sin^{-1} \left(\frac{x}{l} \right)$$

2) Forces

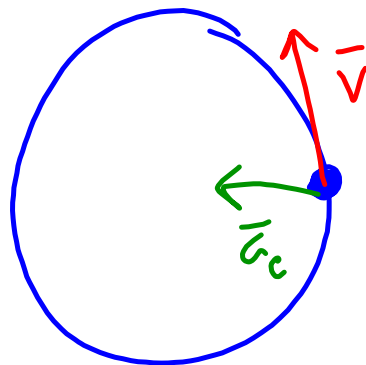


- There is always a real force that is renamed as our centripetal force.

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

a_c → centripetal acceleration
 v → tangential velocity
 r → radius

TOP
VIEW

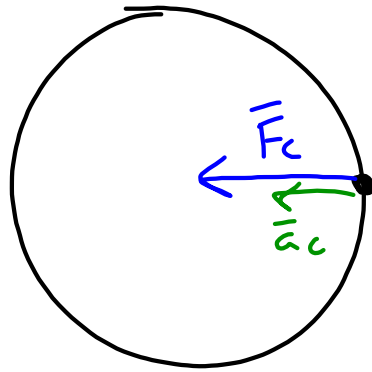


$$F_c = ma_c$$

$$F_c = \frac{mv^2}{r} = F_{TX}$$

$$v = \frac{\Delta x}{\Delta t} = \frac{2\pi r}{\Delta t}$$

TOP VIEW



• Scenarios

- Flying Pig

"Centripetal force"

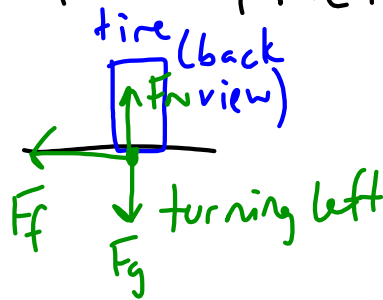
Horizontal tension force (F_{Tx})

- Moon orbiting Earth

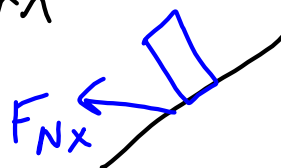
Gravitational

- Car around turn (flat road)

Friction



- Car around turn (angle)



Normal