TALLER 2

$$F \propto \frac{m m_2}{r^2}$$

$\uparrow$

$G \rightarrow$ Cavendish

$$F_g = G\frac{m_1 m_2}{r^2} \rightarrow \vec{g} = G\frac{m}{r^2}(-\hat{r})$$

$$g = 9.81\ m/s^2$$

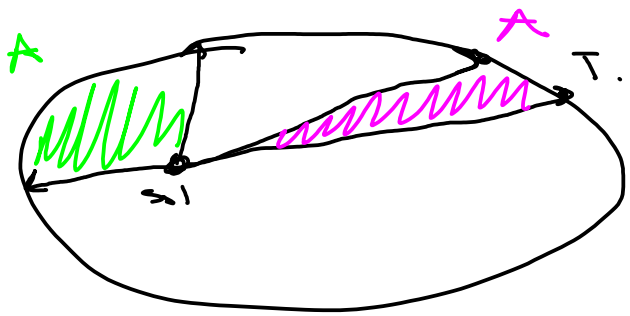
$$\sim 15000\ km$$

Leyes de Kepler

1) Orbitas elipticas.

3) $T^2 \propto a^3$

2



$$\vec{L} = \vec{r} \times \vec{p} \quad , \quad \vec{p} = m\vec{v}.$$

$$\frac{d\vec{L}}{dt} = \frac{d\vec{r}}{dt} \times \vec{p} + \vec{r} \times \frac{d\vec{p}}{dt}$$

$\frac{d\vec{p}}{dt} \rightarrow \vec{F}$ → 2da ley de Newton

$\vec{v} \times m\vec{v} \rightarrow 0$

$$\frac{d\vec{L}}{dt} = \vec{r} \times \vec{F} = \vec{\tau} = 0$$

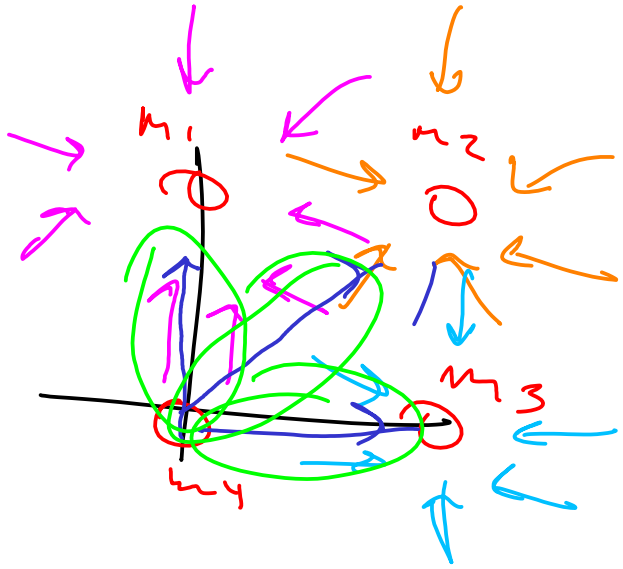
$\vec{\tau} = 0 \rightarrow \vec{L} = cte.$

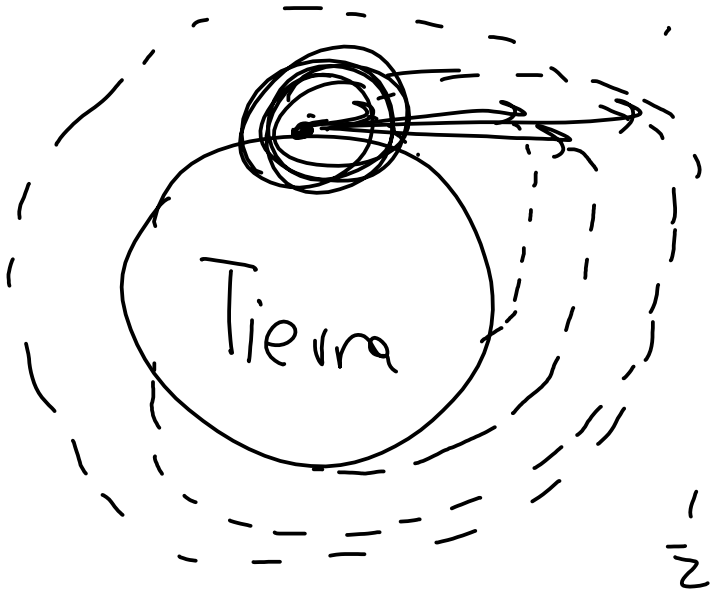
$$\frac{d\vec{L}}{dt} = 0$$

Sist. 2 partículas.

$$U_{12} = -G\frac{m_1 m_2}{r_{12}}$$

$$U_T = -\frac{G}{2}\sum_{i=1}^{n}\sum_{j=1}^{n}\frac{m_i m_j}{r_{ij}}$$





$$-G\frac{m_T m_1}{R_T} + \frac{1}{2}m_1 v^2 = 0$$

$$\frac{1}{2}m_1 v^2 = G\frac{m_T m_1}{R_T}$$

$$v = \sqrt{\frac{2GM_T}{R_T}}$$

Agujeros negros

$\rightarrow v_{escape} = c$

Schwarchild