

• samo grav. Sunca

$$\vec{a} = \vec{g}_s = -\frac{\mu M_s}{r^3} \vec{r}$$

$$\vec{r} = x\vec{e}_x + y\vec{e}_y + z\vec{e}_z$$

$$i = x, y: a_i = -\frac{\mu M_s}{r^3} x_i$$

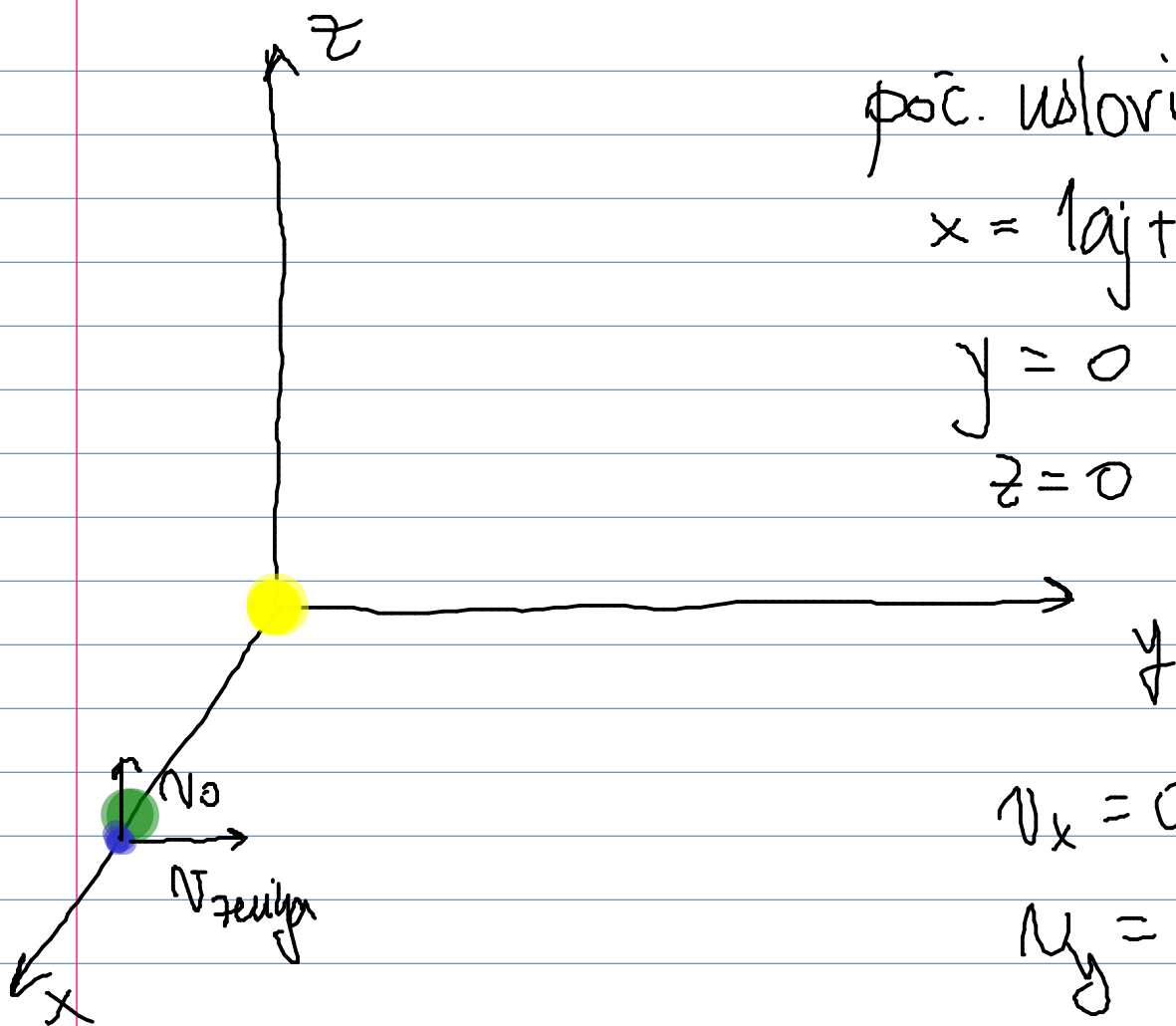
$$r = |\vec{r}| = \sqrt{x^2 + y^2 + z^2}$$

① OK metoda  $\rightarrow v_0 = 10 \text{ km/s}$

b.  $v_{zemlja}$

a) samo grav. Sunca

$$\vec{a} = \vec{g}_s = -\frac{\mu M_s}{r^3} \vec{r}$$

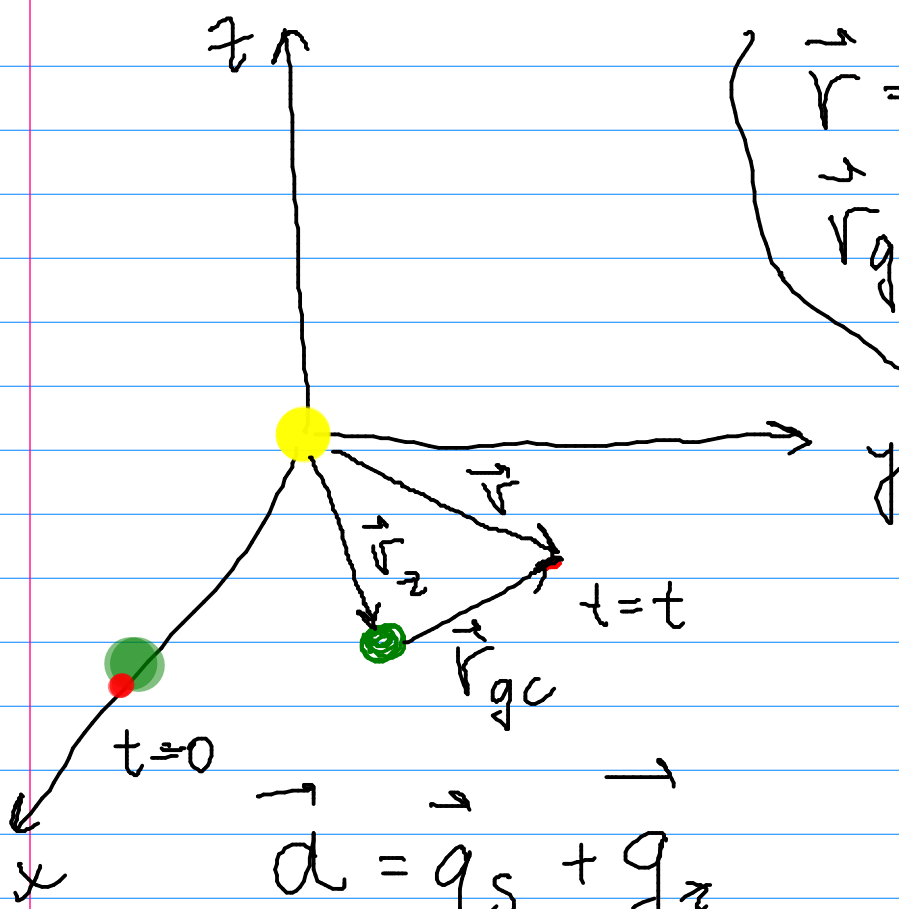


poč. uslovi:  
 $x = 1aj + R_z$   
 $y = 0$   
 $z = 0$

$v_x = 0$   
 $v_y = v_{Zemlja}$   
 $v_z = 0$

$$a_z = - \frac{\gamma M_s}{r^3} z = - \frac{\gamma M_s}{(x^2 + y^2 + z^2)^{3/2}} z$$

b) i grav. Sunca i grav. Zemlje  
 tokom jedne julijanske  
 godine (365,25 dana)



$$\vec{r} = x\vec{e}_x + y\vec{e}_y + z\vec{e}_z$$

$$\vec{r}_{gc} = x_{gc}\vec{e}_x + y_{gc}\vec{e}_y + z_{gc}\vec{e}_z$$

$$\vec{r}_z = x_z\vec{e}_x + y_z\vec{e}_y + z_z\vec{e}_z$$

$z_z = 0$

$$\vec{a} = \vec{g}_s + \vec{g}_z$$

$$\vec{r} = \vec{r}_z + \vec{r}_{gc}$$

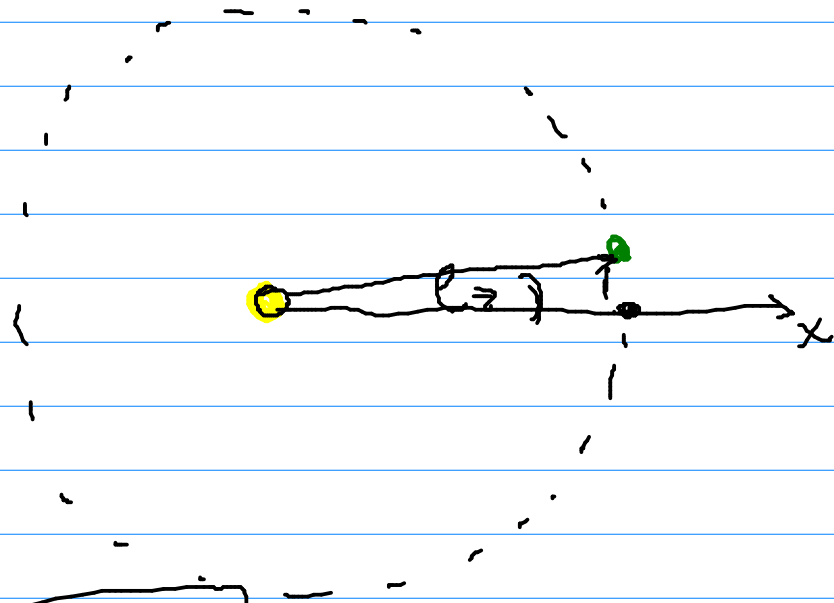
$$\vec{r}_{gc} = \vec{r} - \vec{r}_z$$

$$\vec{a} = -\frac{\mu M_s}{r^3} \vec{r} - \frac{\mu M_z}{r_{gc}^3} \vec{r}_{gc}$$

$$\vec{a} = -\frac{\mu M_s}{(\sqrt{x^2 + y^2 + z^2})^3} \vec{r} - \frac{\mu M_z}{(\sqrt{x_{gc}^2 + y_{gc}^2 + z_{gc}^2})^3} \vec{r}_{gc}$$

heliocentrični sistem = u odnosu  
na Sunce  $\rightarrow (0,0,0)$

geocentrični sistem = u odnosu  
na Zemlju  $\rightarrow (0,0,0)$



$$\boxed{e_z = \omega_z \cdot t}$$

$$1 \text{ god: } 2\pi \text{ (rad)} \Rightarrow \boxed{\omega_z = \frac{2\pi}{1 \text{ god}}}$$

$$v = \omega \cdot r$$

$$\omega = \frac{\Delta\theta}{\Delta t}$$

$$x_z = r_{aj} \cdot \cos(e_z)$$

$$y_z = r_{aj} \cdot \sin(e_z)$$

② Primenom OK metode:

1) geocentričnu putanju

2) heliocentričnu putanju

$$50 R_z, \quad \vec{v} = \underline{N_0 \vec{e}_y} + \underline{\frac{1}{2} V_0 \vec{e}_z}$$

$$N_0 = 1 \text{ km/s}$$

→ i grav. Zemlje i grav. Sunca

