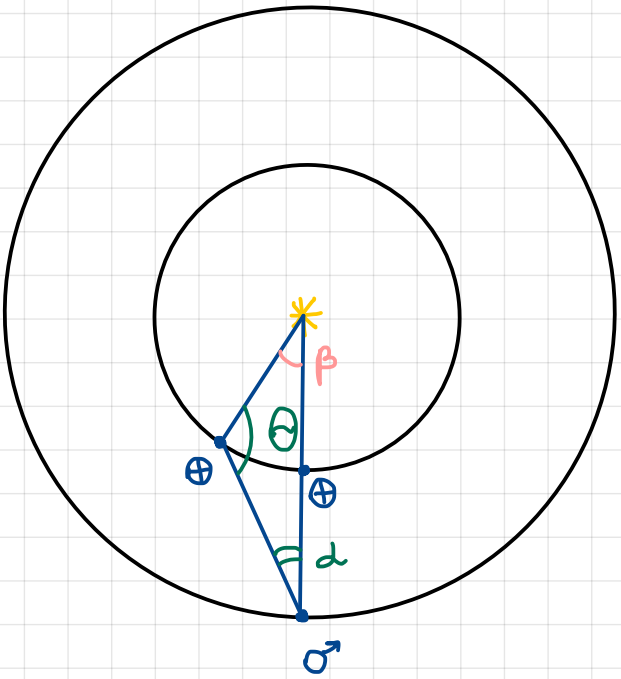
Дано: $a_\oplus = 1$ а.е.; $a_\sigma = 1{,}52$ а.е.; $\Theta_1 = 136^\circ$; $T_\oplus = 365{,}25^d$; $T_\sigma = 686{,}98^d$; $a_\S = 0{,}39$ а.е.; $T_\S = 87{,}97^d$

Найти: t_1 и t_2 -?

Решение:

1)



$\frac{\sin\alpha}{a_\oplus} = \frac{\sin\Theta}{a_\sigma}$ (по т. синусов) $\Rightarrow \alpha \approx 27{,}2^\circ$

$\beta = 180^\circ - \alpha - \Theta = 16{,}8^\circ$

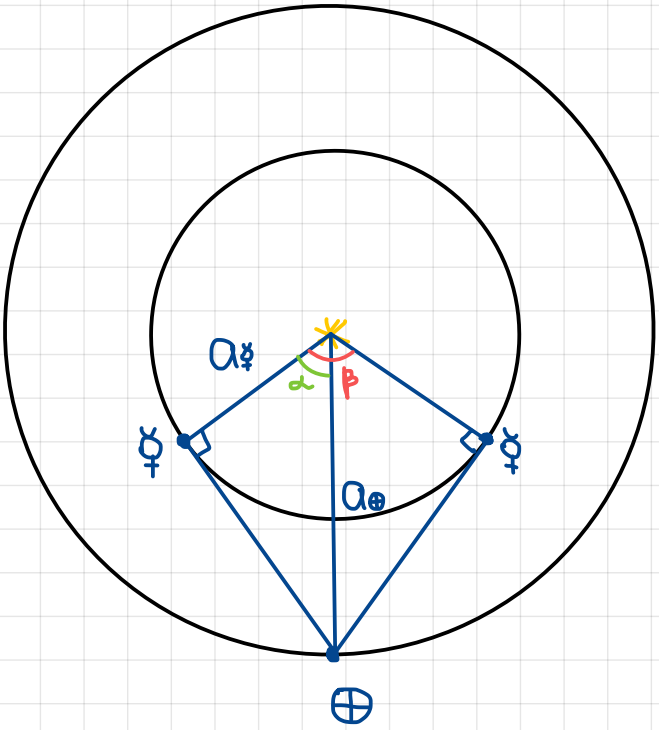
$t_1 = \frac{\beta}{\omega_\oplus - \omega_\sigma}$; $\omega_\oplus = \frac{360^\circ}{T_\oplus}$; $\omega_\sigma = \frac{360^\circ}{T_\sigma}$

$$t_1 = \frac{\beta \cdot T_\oplus \cdot T_\sigma}{360^\circ (T_\sigma - T_\oplus)} \approx 36{,}4^d$$

2)

$\beta = 2\alpha$

$\cos\alpha = \frac{a_\S}{a_\oplus}$ $\Rightarrow \alpha \approx 67^\circ$ $\Rightarrow \beta = 134^\circ$



$$t_2 = \frac{\beta}{\omega_{♀} - \omega_{⊕}} \; ; \quad \omega_{♀} = \frac{360^\circ}{T_{♀}} \; ; \quad \omega_{⊕} = \frac{360^\circ}{T_{⊕}}$$

$$t_2 = \frac{\beta \, T_{♀} \cdot T_{⊕}}{360^\circ \cdot (T_{⊕} - T_{♀})} \approx 43,1^{d}$$

Ответ: 1) $36,4^{d}$; 2) $43,1^{d}$