$$\vec{F}_g = \frac{G m_1 m_2}{R^2}\frac{\hat{R}}{R}$$

$$R = \frac{p}{1 + e\cos\ \theta}$$

$$2a = R_a + R_p$$

$$2c = R_a - R_p$$

$$P = 2\pi\sqrt{\frac{a^3}{\mu}}$$

$$p = a(1 - e^2)$$

$$\varepsilon = \frac{1}{2}V^2 - \frac{\mu}{R}$$

$$\varepsilon = -\frac{\mu}{2a} \quad | \quad e = \frac{2c}{2a}$$

$$\Delta V_{combinado} = \sqrt{\left(\left|\vec{V}_{inicial}\right|\right)^2 + \left(\left|\vec{V}_{final}\right|\right)^2 - 2\left|\vec{V}_{inicial}\right|\left|\vec{V}_{final}\right|\cos\beta}$$

$$\text{i} = \cos^{-1}\left(\frac{\hat{K}\ .\ \vec{h}}{h}\right) \quad | \quad \vec{N} = \hat{K}\ \times\ \vec{h} \quad | \quad \vec{h} = \vec{r}\ \times \vec{v}$$

$$\Omega = \cos^{-1}\left(\frac{\hat{I}.\vec{N}}{N}\right)\ \ Se\ \ N_J \geq 0\ \ \rightarrow 0^0 \leq \Omega \leq 180^0$$

$$\omega = \cos^{-1}\left(\frac{\vec{N}.\vec{e}}{e\ \ N}\right)\ \ Se\ \ e_K \geq 0\ \ \rightarrow 0^0 \leq \omega \leq 180^0$$

$$\theta = \cos^{-1}\left(\frac{\vec{e}\ \ .\ \ \vec{R}}{eR}\right)\ Se\ \ \vec{R}\ \ .\ \ \vec{V} \geq 0\ \ \rightarrow 0^0 \leq \theta \leq 180^0$$

$$\text{u} = \cos^{-1}\left(\frac{\vec{R}.\vec{N}}{RN}\right)\ Se\ \ R_I > 0\ \ \rightarrow 0^0 < u < 180^0$$

$$\text{l} = \cos^{-1}\left(\frac{\hat{I}.\vec{R}}{R}\right)\ \ Se\ \ R_J \geq 0\ \ \rightarrow 0^0 < l < 180^0$$

$$\Pi = \cos^{-1}\left(\frac{\hat{I}.\vec{e}}{e}\right)\ Se\ \ e_J \geq 0\ \ \rightarrow 0^0 < \Pi < 180^0$$

$$\Delta V_{simples} = 2V_{inicial}\,\text{sen}\left(\frac{\beta}{2}\right)$$

$$\vec{e} = \frac{1}{\mu}\left[\left(V^2 - \frac{\mu}{R}\right)\ \ \vec{R} - \left(\vec{R}\ \ .\ \ \vec{V}\right)\ \ \vec{V}\right]$$

$T_e = (\varphi_{final} - \varphi_{inicial})/(n_{alvo} - n_{interceptador})$

$$\mu = 3{,}986 \times 10^5\ {}^{km^3}/_{s^2}$$

$$r_T = 6.378\ km$$

$\mu = G\,M$ | $n = \frac{2\pi}{P}$

$$n \neq N;\ P \neq p$$