HOHMANN TRANSFER ALGORITHM

1. Find velocity in orbit 1

$$V_1 = \sqrt{\frac{\mu}{R_1}}$$

2. Find energy and size of transfer orbit

$$a_t = \frac{R_1 + R_2}{2} \qquad \varepsilon_t = -\frac{\mu}{2a_t}$$

3. Find velocity on transfer ellipse at perigee

$$V_{t1} = \sqrt{2\left(\frac{\mu}{R_1} + \varepsilon_t\right)}$$

4. Find $\Delta V_1 = |V_{t1} - V_1|$
5. Find velocity in orbit 2

$$V_2 = \sqrt{\frac{\mu}{R_2}}$$

6. Find velocity on transfer ellipse at apogee

$$V_{t2} = \sqrt{2\left(\frac{\mu}{R_2} + \varepsilon_t\right)}$$

7. Find $\Delta V_2 = |V_2 - V_{t2}|$

8. Find $\Delta V_{total} = \Delta V_1 + \Delta V_2$

9. Find time of flight

$$TOF = \pi\sqrt{\frac{a_t^3}{\mu}}$$

L George 3/13/15