

As orbital altitude increases, how does the orbital period  $T$  and the orbital velocity  $v$  behave?

A  $T$  is independent of the altitude

0

B  $T$  decreases

0

C  $T$  increases

0



D  $v$  is independent of the altitude

0

E  $v$  decreases

0



F  $v$  increases

0

How are the burns in a Hohman transfer?

A the 1st prograde, the 2nd retrograde

0

B both in the same direction

0



C both always prograde

0

D both radial

0

If I conduct a small  $dv = 0.1$  m/s (retrograde), how will be my final orbit?

- |   |   |                                       |
|---|---|---------------------------------------|
| A | circular, 0.35 km lower                   | 0                                     |
| B | elliptical, with an apogee 0.35 km higher | 0                                     |
| C | elliptical, with a perigee 0.35 km lower  | 0 <input checked="" type="checkbox"/> |
| D | elliptical, with a perigee 3.5 km lower   | 0                                     |

What is the correct equation for a plane change manoeuvre?

A

.

0



$$\Delta v = 2v \sin\left(\frac{\alpha}{2}\right)$$

B

.

0

$$\Delta r \approx 3.5\Delta v$$

C

.

0

$$\Delta v_1 = \sqrt{\frac{2\mu r_2}{r_1(r_1 + r_2)}} - \sqrt{\frac{\mu}{r_1}}$$

D

.

0

$$v = \sqrt{\frac{2\mu}{r} - \frac{\mu}{a}}$$

When should a plane change manoeuvre be done to minimise effects on other parameters and use as little  $\Delta v$  as possible?

A At perigee, when the change in kinetic energy is the greatest 0

B At apogee, when the velocity is smallest 0

C At the nodal crossing 0

D At the highest angle from the equator possible 0

A posigrade burn ...

- |   |  |                                       |
|---|--|---------------------------------------|
| A | decreases altitude $180^\circ$ from the burn point | 0                                     |
| B | shifts the semi-major axis by $180^\circ$          | 0                                     |
| C | increases altitude $180^\circ$ from the burn point | 0 <input checked="" type="checkbox"/> |
| D | changes the inclination of the orbit               | 0                                     |

I want to change the semi-major axis of the orbit, the RAAN and the inclination. What should I solve?

- |   |                              |   |
|---|------------------------------|---|
| A | A Hohmann tranfert           | 0   |
| B | A plane change manoeuvre     | 0   |
| C | A one-tangent burn manoeuvre | 0   |
| D | Lambert's problem            | 0  |

At 400 km altitude, what is the size of the Earth out of the ISS' window (i.e. the cupola)?

A 140°

0

B 17°

0

C 2°

0

D 70°

0

What does orbit determination (OD) mean?

A Finding a description of the orbit

0

B Solving for  $dv$

0

C Designing the orbit pre-flight

0

D The process of converting a TLE to a state vector

0