Table of Contents

Roshan Jaiswal-Ferri

```
%Section - 01
%Aero 446 HW1: 4/11/25
```

Workspace Prep

```
%warning off
format long      %Allows for more accurate decimals
close all;       %Clears all
clear all;       %Clears Workspace
clc;             %Clears Command Window
```

Question 1

```
mu = 398600;
Re = 6378;
KuiperP2 = 450; % km
OneWeb = 1200; %km
O3bmPOWER = 8000; % km

r = [KuiperP2,OneWeb,O3bmPOWER] + Re;

p = (2*pi*sqrt((r.^3)./mu))./60;
disp(['Period in Minutes in order: ', num2str(p)])

FOR = 2*asind(Re./r);

disp(['Angles of FOR in order (deg): ', num2str(FOR)])
```

```
Period in Minutes in order: 93.58371      109.4188      285.9616
Angles of FOR in order (deg): 138.1648      114.6289      52.66689
```

Question 2

```
period = 86164; %23h 56m 4s in seconds (1 day)
rgeo = (mu*(period/(2*pi))^2)^(1/3);
disp(['Rgeo: ', num2str(rgeo), ' km'])
FORg = 2*asind(Re/rgeo);
disp(['FOR for geo: ', num2str(FORg), ' deg'])
```

```
Rgeo: 42164.1245 km
FOR for geo: 17.4006 deg
```

Question 3

```
period = 88642; %mars day
rgeo = (mu*(period/(2*pi))^2)^(1/3);
disp(['Rgeo: ', num2str(rgeo), ' km'])
FORg = 2*asind(Re/rgeo);
disp(['FOR for mars geo: ', num2str(FORg), ' deg'])
```

```
Rgeo: 42968.7002 km
FOR for mars geo: 17.0723 deg
```

Question 4

```
rwv = 617; %alt from google of s/c
FOV = 2*atand((6.5)/rwv);
disp(['FOV: ', num2str(FOV), ' deg'])
```

```
FOV: 1.2072 deg
```

Published with MATLAB® R2024b