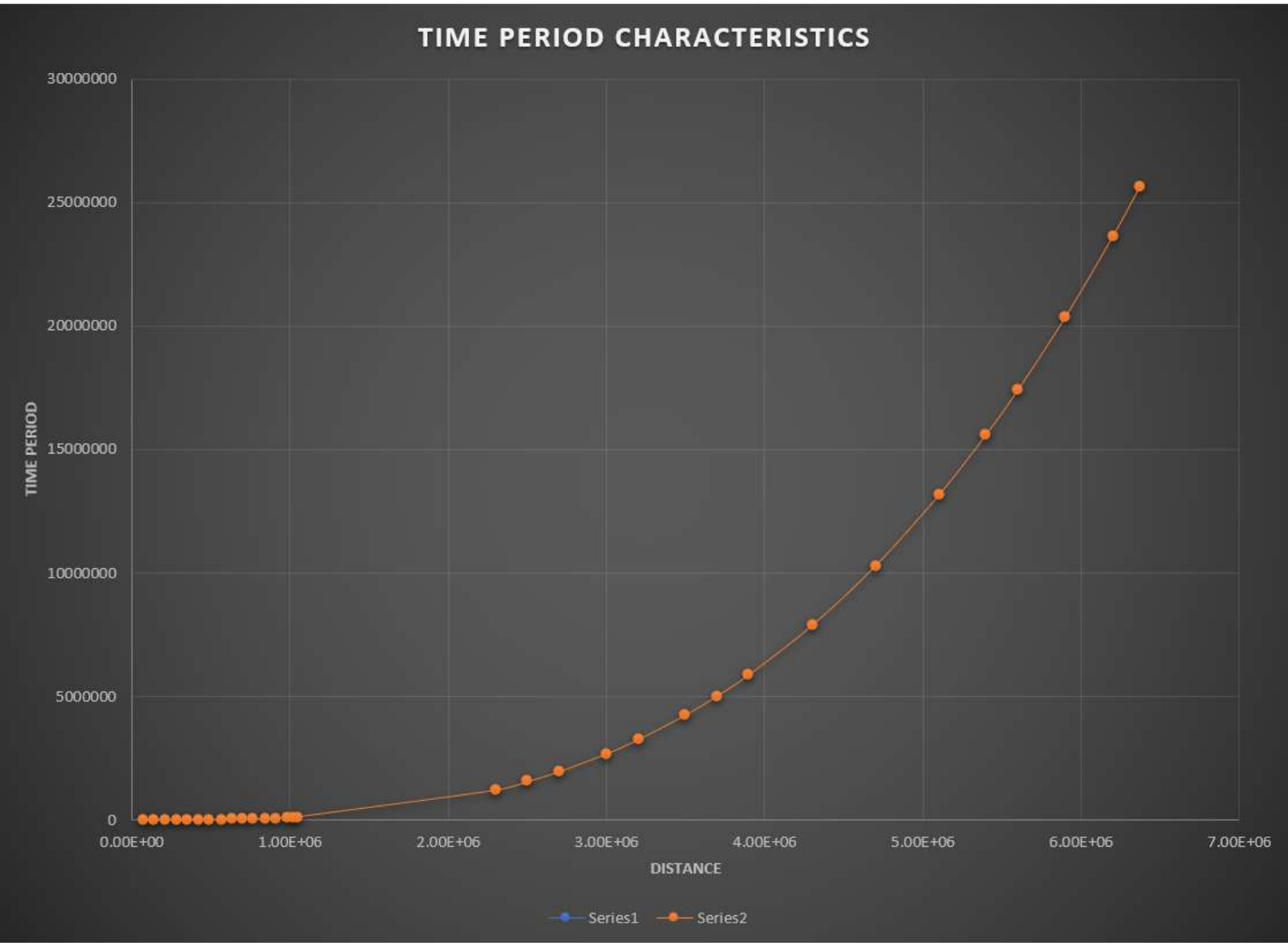
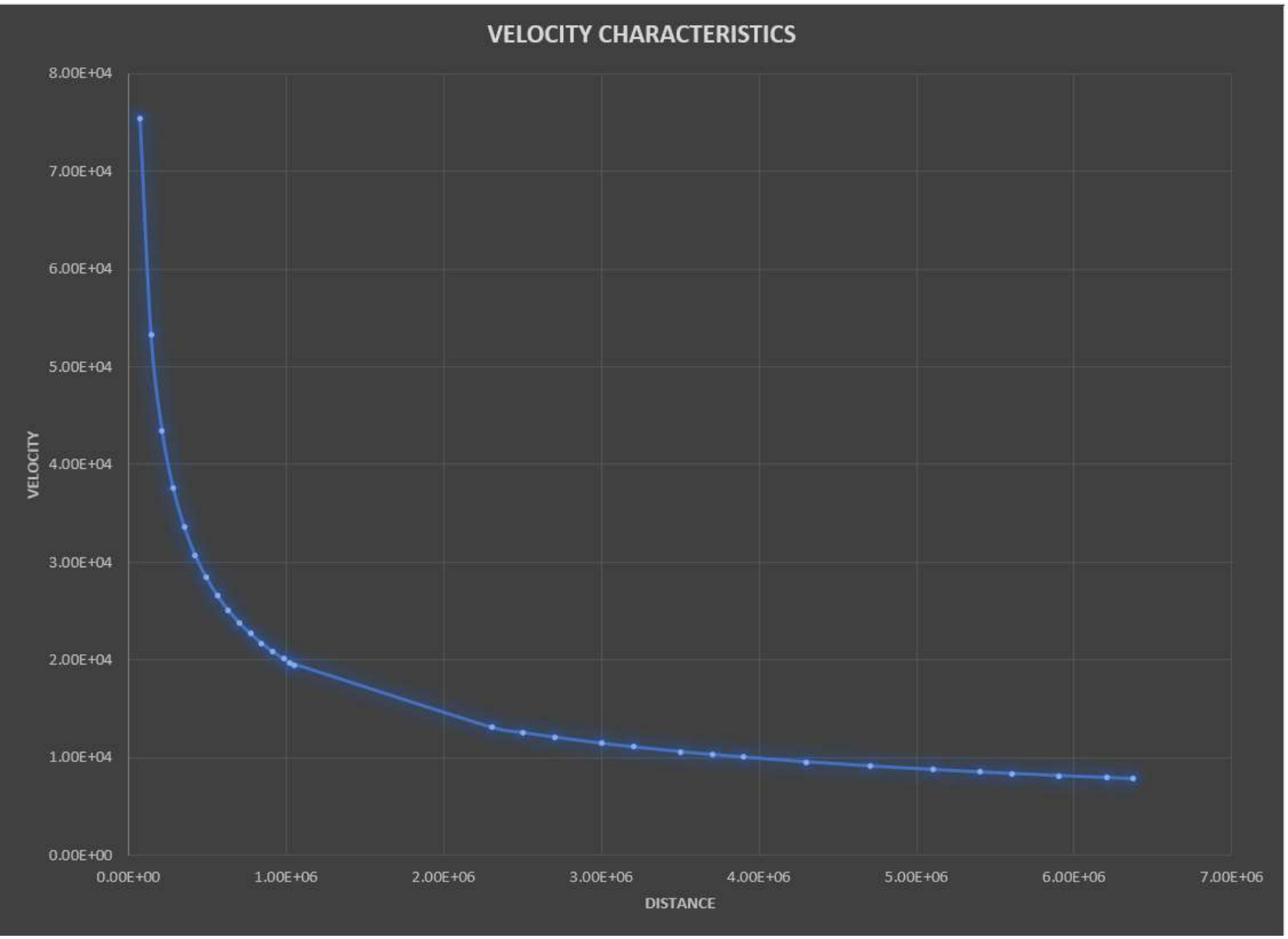
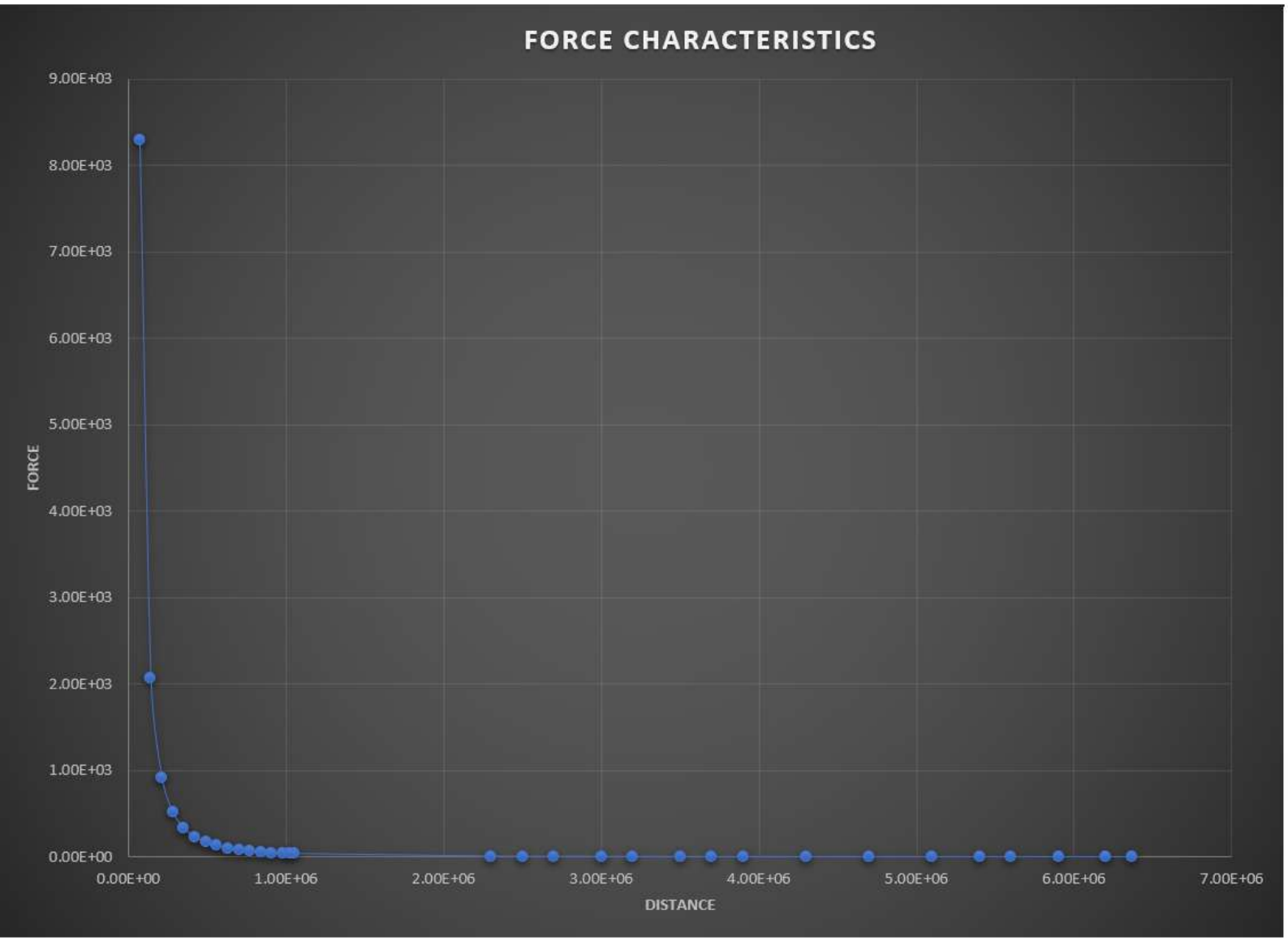
VARIABLES			UNITS				PERIOD	VELOCITY	FORCE
1	DEPENDENT	Gravitational Force [F]	Newton[kgms^-2]			Radius (m)	p^2= (4*(3.1415)^2*R^3)/(G*M1)	V=((G*M1)/R)^0.5	F = (G*M1*M2)/(R)^2
2	INDEPENDENT	Radius[R]	metres(m)	6.37E+06		7.00E+04	3.40E+01	7.54E+04	8.29E+03
3	CONSTANTS	Universal Gravitational constant[G]	m^3kg^-1s^-2	6.67E-11		1.40E+05	2.72E+02	5.33E+04	2.07E+03
		Mass of the earth [M1]	kilogram(kg)	5.97E+24		2.10E+05	9.18E+02	4.35E+04	9.21E+02
		Mass of the satellite [M2]	kilogram(kg)	1.02E-01		2.80E+05	2.18E+03	3.77E+04	5.18E+02
						3.50E+05	4.25E+03	3.37E+04	3.32E+02
						4.20E+05	7.34E+03	3.08E+04	2.30E+02
						4.90E+05	1.17E+04	2.85E+04	1.69E+02
						5.60E+05	1.74E+04	2.67E+04	1.30E+02
						6.30E+05	2.48E+04	2.51E+04	1.02E+02
						7.00E+05	3.40E+04	2.39E+04	8.29E+01
						7.70E+05	4.53E+04	2.27E+04	6.85E+01
						8.40E+05	5.88E+04	2.18E+04	5.76E+01
						9.10E+05	7.47E+04	2.09E+04	4.91E+01
						9.80E+05	9.33E+04	2.02E+04	4.23E+01
						1.05E+06	1.15E+05	1.95E+04	3.68E+01
						1.02E+06	1.05E+05	1.98E+04	3.90E+01
						2.30E+06	1.21E+06	1.32E+04	7.68E+00
						2.50E+06	1.55E+06	1.26E+04	6.50E+00
						2.70E+06	1.95E+06	1.21E+04	5.57E+00
						3.00E+06	2.68E+06	1.15E+04	4.51E+00
						3.20E+06	3.25E+06	1.12E+04	3.97E+00
						3.50E+06	4.25E+06	1.07E+04	3.32E+00
						3.70E+06	5.02E+06	1.04E+04	2.97E+00
						3.90E+06	5.88E+06	1.01E+04	2.67E+00
						4.30E+06	7.88E+06	9.62E+03	2.20E+00
						4.70E+06	1.03E+07	9.21E+03	1.84E+00
						5.10E+06	1.31E+07	8.84E+03	1.56E+00
						5.40E+06	1.56E+07	8.59E+03	1.39E+00
						5.60E+06	1.74E+07	8.43E+03	1.30E+00
						5.90E+06	2.04E+07	8.22E+03	1.17E+00
						6.20E+06	2.36E+07	8.01E+03	1.06E+00
						6.37E+06	2.56E+07	7.91E+03	1.00E+00

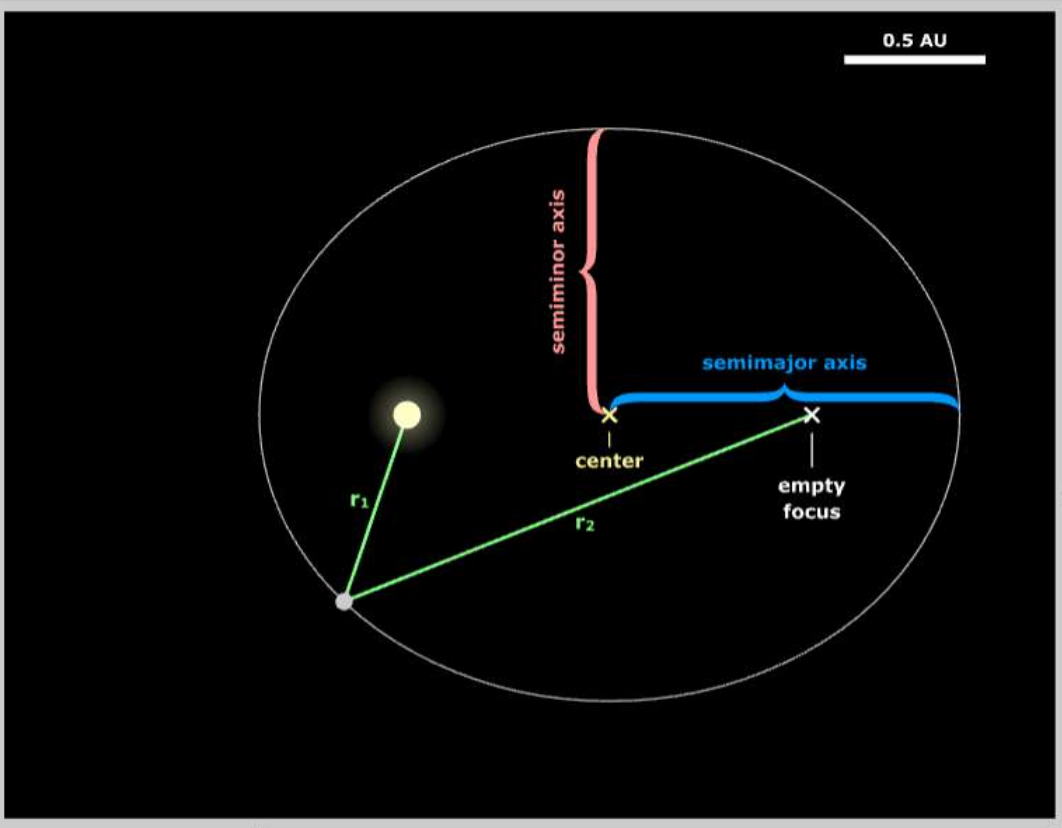

TIME PERIOD CHARACTERISTICS
30000000
25000000
20000000
15000000
10000000
5000000
0
TIME PERIOD
0.00E+00
1.00E+06
2.00E+06
3.00E+06
4.00E+06
5.00E+06
6.00E+06
7.00E+06
DISTANCE
Series1
Series2


VELOCITY CHARACTERISTICS
8.00E+04
7.00E+04
6.00E+04
5.00E+04
4.00E+04
3.00E+04
2.00E+04
1.00E+04
0.00E+00
VELOCITY
0.00E+00
1.00E+06
2.00E+06
3.00E+06
4.00E+06
5.00E+06
6.00E+06
7.00E+06
DISTANCE


FORCE CHARACTERISTICS
9.00E+03
8.00E+03
7.00E+03
6.00E+03
5.00E+03
4.00E+03
3.00E+03
2.00E+03
1.00E+03
0.00E+00
FORCE
0.00E+00
1.00E+06
2.00E+06
3.00E+06
4.00E+06
5.00E+06
6.00E+06
7.00E+06
DISTANCE

Planetary Orbit Simulator

reset help about



Orbit Settings

set parameters for: Earth OK

semimajor axis (AU) 1.24

eccentricity 0.578

Animation Controls

start animation

animation rate (yrs/s) 0.20

Kepler's 1st Law

Kepler's 2nd Law

Kepler's 3rd Law

Newtonian Features

- [x] show empty focus
- [x] show center
- [x] show semiminor axis
- [x] show semimajor axis
- [x] show radial lines

$r_1 + r_2 = 2 \times a$

0.697 AU + 1.78 AU = 2.48 AU

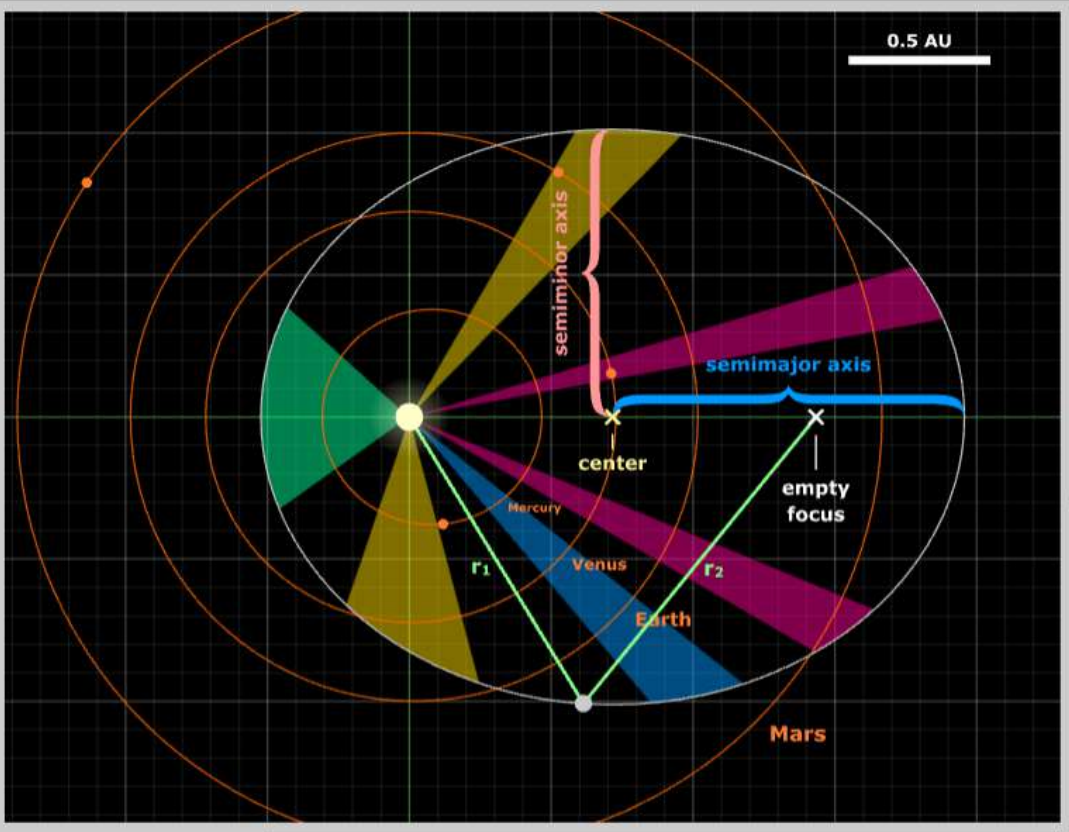
Visualization Options

- [ ] show solar system orbits
- [ ] show solar system planets
- [ ] label the solar system orbits
- [ ] show grid

clear optional features

Planetary Orbit Simulator

reset help about



Orbit Settings

set parameters for: Earth OK

semimajor axis (AU) 1.24

eccentricity 0.578

Animation Controls

start animation

animation rate (yrs/s) 0.20

Kepler's 1st Law

Kepler's 2nd Law

Kepler's 3rd Law

Newtonian Features

start sweeping

erase sweeps

sweep continuously

use sound effect

adjust size:

a fractional sweep size of

$\frac{1}{20}$ (or 5.0%)

corresponds to sweep duration of

0.0690 years

and a sweep area of

0.197 sq AU

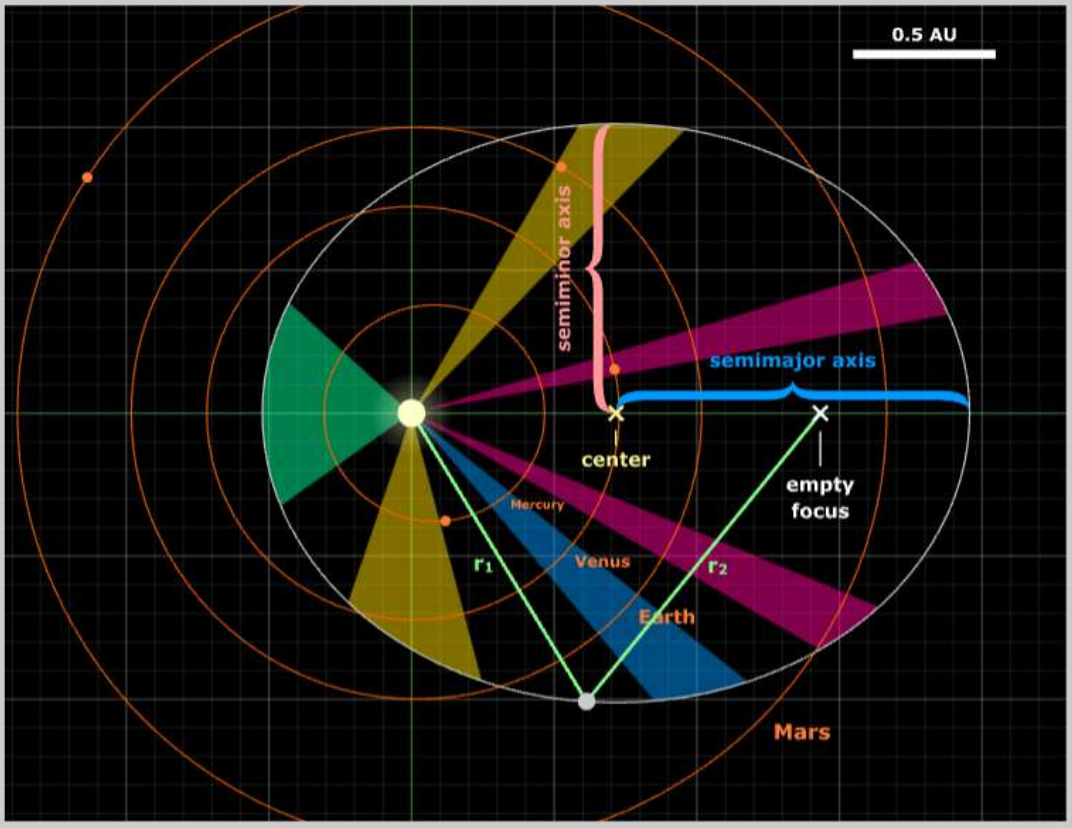
Visualization Options

- [x] show solar system orbits
- [x] show solar system planets
- [x] label the solar system orbits
- [x] show grid

clear optional features

Planetary Orbit Simulator

reset help about



Orbit Settings

set parameters for: Earth OK

semimajor axis (AU) 1.24

eccentricity 0.578

Animation Controls

start animation

animation rate (yrs/s) 0.20

Kepler's 1st Law

Kepler's 2nd Law

Kepler's 3rd Law

Newtonian Features

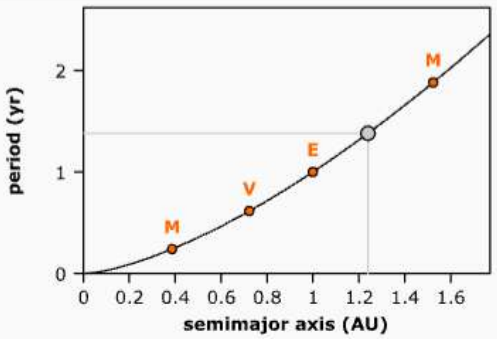
$P^2 = a^3$

$(1.38)^2 = (1.24)^3$

$= 1.91$

plot type:

- (•) linear
- ( ) logarithmic



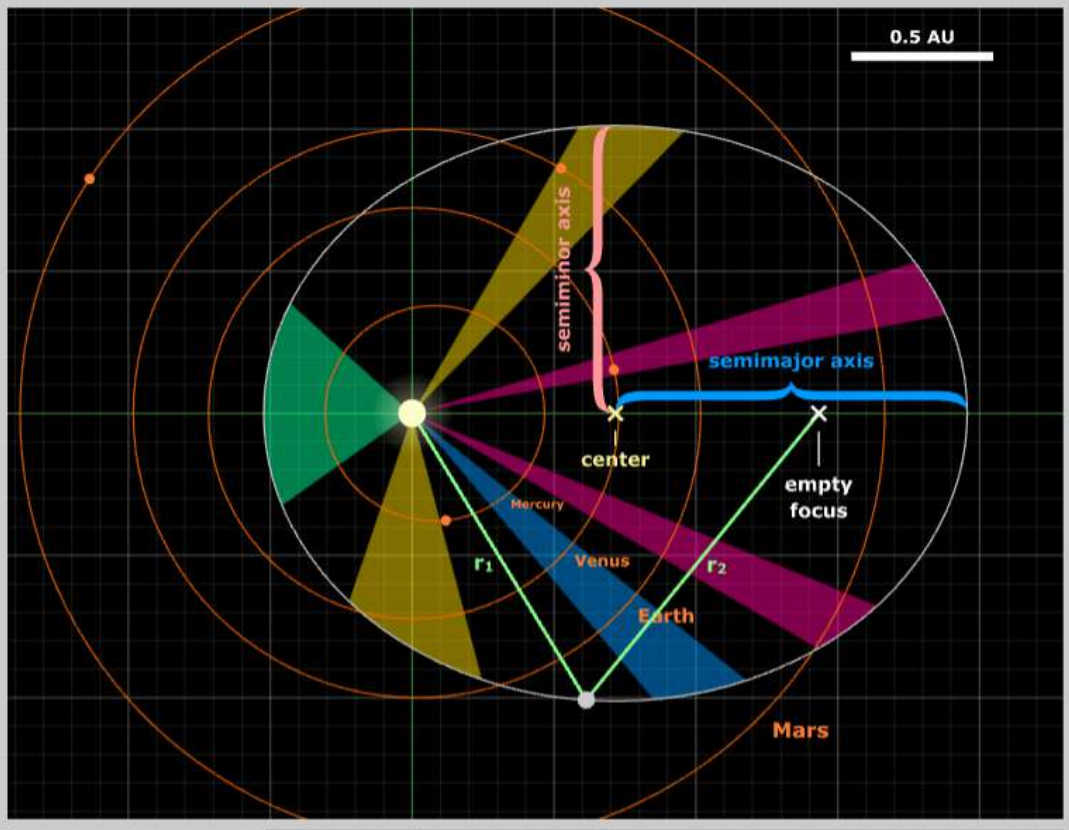
Visualization Options

- [x] show solar system orbits
- [x] show solar system planets
- [x] label the solar system orbits
- [x] show grid

clear optional features

Planetary Orbit Simulator

reset help about



Orbit Settings

set parameters for: Earth OK

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Animation Controls

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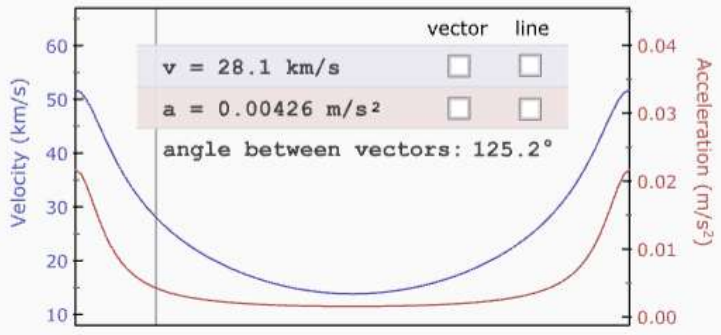
animation rate (yrs/s) 0.20

Kepler's 1st Law

Kepler's 2nd Law

Kepler's 3rd Law

Newtonian Features



Visualization Options

- [x] show solar system orbits
- [x] show solar system planets
- [x] label the solar system orbits
- [x] show grid

clear optional features