

Astronomy 45
Introduction to Astrophysics

Problem Set 1 - Due Friday, September 21

- Given that $1\text{AU} = 1.496 \times 10^8 \text{ km}$, use the table on p. 1-13 to make a list of the velocities v of the planets in km s^{-1} . Then make a list of the values of $v^2 r$ where r is the radius of the orbit. Can you say anything about the force experienced by the planets?
- Which planet of the Solar system has the shortest synodic period and what is its value in Earth years? The sidereal periods in Earth years are given in the Table.

Planet	Sidereal Period	Planet	Sidereal Period
Mercury	0.2408	Saturn	29.4577
Venus	0.6152	Uranus	84.0139
Earth	1.0000	Neptune	164.793
Mars	1.8809	Pluto	248.54
Jupiter	11.8622		

- What is the synodic period of Earth as seen by an observer on Mars expressed in Martian years?