

## AS9 v1 EX 17.2 (Kepler's 1<sup>st</sup> law)

- An ellipse is a curve that is the locus of all points in the plane the sum of whose distances  $r_1$  and  $r_2$  from two fixed points  $F_1$  and  $F_2$  (the foci) separated by a distance  $2c$  is a given positive constant  $2a$ .  
(Hilbert and Cohn-Vossen 1999, p.2) - from Wolfram Math World.
- The major axes of the planets' orbits are not all parallel (nor are they perfectly stationary; Mercury's orbital "ellipse" precesses at a rate of 5600 arc-seconds per century)
- The eccentricities of the planets' orbital ellipses are different
- The sun lies at a focus of each planets' orbital ellipse.