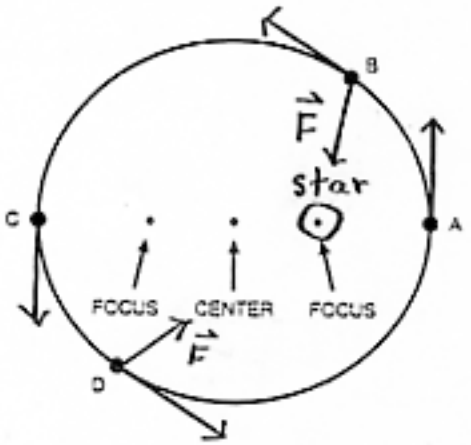
6. (7 pts) You see below a sketch illustrating the elliptical orbit of a planet about a star.



(a) The center and two foci of the ellipse are shown. Circle a point that shows a possible location of the star. Write the word "star" above this circled point.

(b) Consider the moment at which the planet is at point B on the orbit. At this point, draw an arrow that shows the direction of the *force* vector acting on the planet at this moment. Label this vector by the symbol $\vec{F}$.

(c) Consider the moment at which the planet is at point D on the orbit. At this point, draw an arrow that shows the direction of the *force* vector acting on the planet at this moment. Label this vector by the symbol $\vec{F}$.

$\vec{F}$ points toward the star

(d) Suppose the planet goes around the star counter clockwise. Consider the points A, B, C, and D on the orbit. At each of these points draw an arrow showing the direction of the *velocity* vector.

(e) List below the point or points on the orbit at which the speed is the largest and the smallest.

i. Speed is largest at point or points A.

ii. Speed is smallest at point or points C.