Math 241 X8 **Name:**

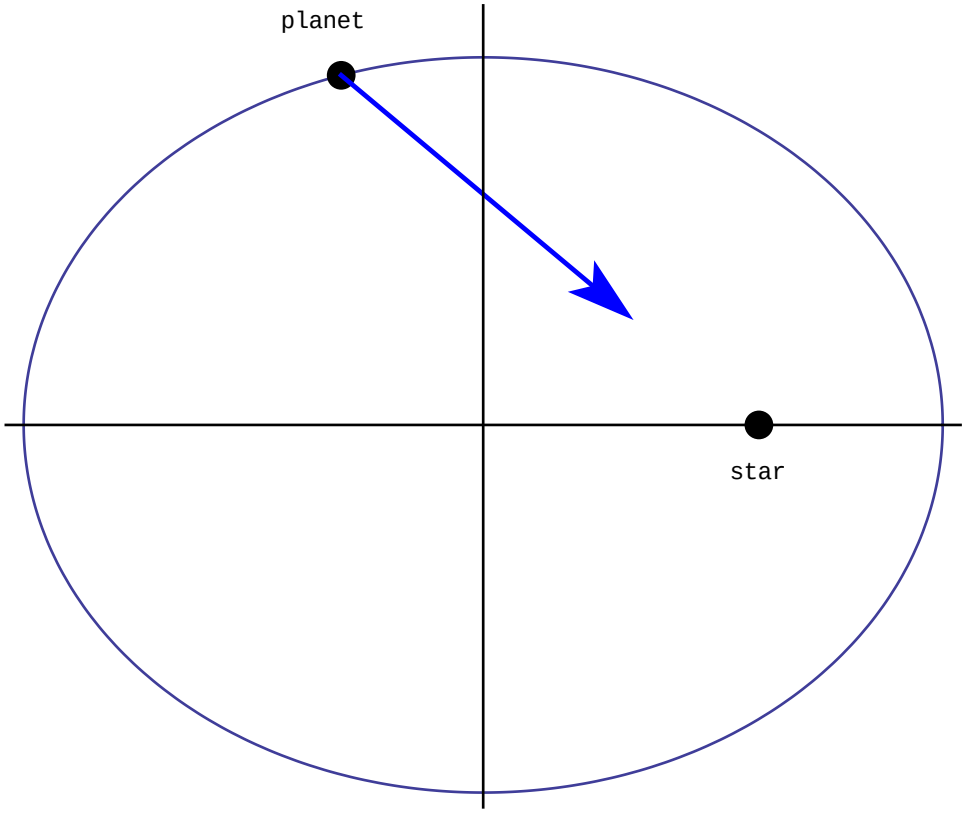
Quiz # 1

September 10, 2013 No electronic devices or interpersonal communication allowed. Show work to get credit.

1) [5pts.] Parametrize the curve $\left(\frac{x}{3}\right)^2 + \left(\frac{y}{2}\right)^2 = 1$. (Make sure to specify a range for t.)

2) [5pts.] Parametrize the line segment joining $(3, 1, 4)$ to $(6, -1, 8)$. (Make sure to specify a range for t.)

3) [6 pts.] A planet orbits a star as shown below, orbiting counterclockwise (in the picture). The acceleration vector of the planet (cause by gravity from the star) is also shown. Sketch in a possible velocity vector for the planet. Then sketch the push of the acceleration in the directions that are tangential to motion and perpendicular to motion. (Make sure to label these.) Is the planet speeding up or slowing down?



4) [4 pts.] Compute the push (a.k.a. projection) of $\vec{u} = \langle -1, 6, 7 \rangle$ in the direction of $\vec{v} = \langle 2, 1, -2 \rangle$. Is it with $\vec{v}$ or against it?