1. **In alternative solar system,** is a star Nus with two planets Htrae and Sram. Htrae orbits Nus at a distance of 1AU, and it takes 3 of our years for Htrae to orbit once around Nus. Sram orbits at a distance of 1.88 AU.
    a. (3 pts.) What principle or law enables you to do parts (b) and (c)?
    b. (2 pts.) What is the mass of Nus compared with the mass of the Sun?
    c. (2 pts.) What is the period of Sram's orbit?
2. **The distance to star A** is 3.4 pc, and its coordinates are 15 hr + 0°. Star B is much farther away, and its coordinates are 15 hr + 0°. For this problem, assume the orbit of the earth is along the celestial equator.
    a. (Not graded. You must check yourself carefully, because mistakes here will invalidate the other parts.) Draw a picture to show the location of the star and the location of the earth on the equinoxes.
    b. (1 pt.) On which two dates is the parallactic shift between the two stars zero? (That means the two stars are coincident, since their coordinates are identical.) (1 pt.) On which date is the parallactic shift largest to the east? (5 pts.) Explain how you found the answers.
    c. (3 pts.) Sketch a plot to show how the parallactic shift changes with time over the course of a year. On the vertical axis, plot a shift to the east as positive and the shift to the west as negative. Plot time on the horizontal axis.
    d. (2 pts.) Calculate the greatest parallactic shift.