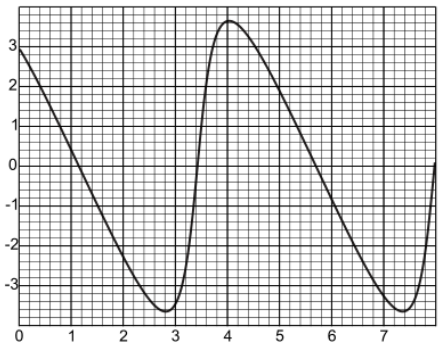
2. Planets (6 pts)

Two planets move along circular orbits around a star of mass $M = 2.0 \cdot 10^{30}\,\mathrm{kg}$; gravitational constant $G = 6.67 \cdot 10^{-11}\,\mathrm{m^3/kg \cdot s^2}$. The dependence of the angular distance between a planet and the star on time, as seen from the other planet, is depicted in figure.



1) What is the ratio of the radii of the planets k (2 pts)?

2) Determine the value of the unit on the vertical axis (or express it in terms of k, if you were unable to find it) (2 pts).

3) What are the orbital radii of the planets, if the unit on the horizontal axis equals to one year (2 pts)?