

PHYS-UA 120 Dynamics Problem Set 3

Due in the "Dynamics" hand-in box before noon on 2014 October 2.

Problem 1:

Kibble & Berkshire, Ch 4, problem 16

Problem 2:

Kibble & Berkshire, Ch 4, problem 24

Problem 3:

Kibble & Berkshire, Ch 4, problem 28

Problem 4:

Use the ideas in Kibble & Berkshire, Ch 4, problem 18 to write a Python program (using numpy and matplotlib, perhaps) that plots x vs t and y vs t for the eccentric orbit described there. Set $e = 0.55$ and $a = 1$ AU and $\tau = 1$ yr. Make your time axis extend over $0 < t < 4$ yr. Plot 250 equally spaced time points per year (1000 total in the 4 yr). Label your axes! You will have to solve Kepler's equation iteratively, I expect! Hand in your code along with your plots.