09-04 Beginner python calculations

This assignment treats python like a graphing calculator.

1. Read Chapter 2 of the textbook.
2. Pick out and solve one of the programming problems in Chapter 2
3. Pick out and solve another programming problems in Chapter 2
4. A rocket is launched from the Earth towards the Moon. The rocket is moving quickly enough that the moon is approximately stationary.
   1. What equation describes the net force on the rocket as it makes the trip? You’ll want to use Newtonian gravitation for this, NOT mg. You’ll also want to include the force of the earth and that of the moon.
   2. Write a python program that creates a plot of the net force on the rocket as a function of the rocket’s distance from earth.
   3. What is the potential energy of the rocket-earth-moon system? Come up with an equation.
   4. Write another python program that plots this potential energy as the rocket moves from earth to the moon.
   5. If the rocket isn’t travelling fast enough, what happens? Is this behavior visible on your graphs?
   6. What does “fast enough” mean on these graphs if the rocket is out of propellant and is coasting? Where is the “point of no return”?