Question -4:

It is imperative to understand that Euler’s method is very basic compared to the other two methods as it doesn’t consider the higher derivatives. So the error in the Euler’s method piles up which we can see in the graph. The graph will not lie between the boundaries and it goes on increasing. The graphs for varlets and leapfrog are more accurate. As a result the total energy is increasing in Euler’s. Another important point to note is the position is most accurate in verlet’s and velocity is more accurate in leapfrog. It is better to consider energies of verlet’s as the position and velocity is not calculated at the same time in leapfrog.