

## Homework 3

*Due: Thursday 21 September*

1. In Lab3 you constructed a table showing the error in the energy of a harmonic oscillator as a function of the time step  $dt$  for the Euler algorithm. In lecture 3 we discussed an improved algorithm – the leapfrog or Verlet algorithm. Modify the code used in lab 3 so as to use this new algorithm and construct a new table showing the new error versus time step  $dt$ .
2. Using the simple plotting code you were given in lab3 draw a graph of this error versus timestep. Comment on the shape of the graph