27. Solve the differential equation dy/dt = − 100 y + 99 e− t with the initial condition y(0)=2 using the Euler’s method to obtain the value of y at t=0.1. Use time steps of (a) 0.01 (b) 0.02 and (c) 0.025. Find the analytical solution and compare the errors for these time steps.

28. Repeat the previous problem using the Implicit Euler’s method for all three step sizes.

29. Solve the differential equation dy/dt = − y + e−t with the initial condition y(0)=1 using (a) the Milne’s method and (b) 4th order Adams method to obtain the value of y at t=0.8 and 1.0. (To start the computations for these multi-step methods, find the analytical solution and use the true values of y and dy/dt at t=0, 0.2, 0.4, and 0.6.)