**Home Assignment 11 – ODE**

1. Use Euler’s method to solve the ODE from x=0 to x=2.5 with initial condition y (0) =3
   1. White a program that solves the equation using h=0.1
   2. Compare the results with the exact (analytical) solution:
   3. Plot the graph of function y(x)
   4. Calculate the True absolute error for each value of x
   5. Print numerical results on the screen in the form shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| x | y\_true | y\_Euler | abs\_error |
| 0.0 |  |  |  |
| …. |  |  |  |
| 2.5 |  |  |  |

1. Given that y(x) is the solution of Find the value of function using a second order Taylor Series Method for x=0 to x=4. Step size is 0.2
   1. Plot the graph of function y(x)
   2. Print on the screen numerical results.
2. Find y (0.1), y (0.2), y (0.3) …. y (1) for differential equation using 2nd and 3rd order Taylor Series Method
   1. Plot the graphs of functions y(x) obtained by different methods
   2. Compare numerical results on the screen.