A solution to the differential equation :

$$\ddot{x}(t) + 3\dot{x}(t) + 3x(t) = 0$$

$$\dot{x}(0) = 1; x(0) = 0$$

is a function $x(t)$ that satisfies the equations.

* Analytical solutions are available for
   special cases only.

Partial Differential Equations are more
  difficult to solve than ordinary differential
  equations:

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial t^2} + 2 = 0$$

$$u(0,t) = u(1,t) = 0, \; u(x,0) = \sin(\pi x)$$

Questions

1. Find the positive root of $x^4 - x = 10$ correct to three decimal places using Newton – Raphson method.

2. Using Newton iterative method find the root between 0 & 1 of $x^3 = 6x - 4$ correct to two places.

3. Find the real positive root of $3x - \cos x - 1 = 0$ by newton method coprrect to 6 decimal places.

4. Find a root of $x \log 10x - 1.2 = 0$ by N – R method correct to 3 decimal places.

5. Obtain newton iterative formula for finding root N . where N is a positive real number. Hence evaluate root of 142.

6. Solve the following system of equations by Gauss – Jordon method.
    $10x+y+z = 12$, $2x+10y+z =13$, $x+y+5z =7$