Assignment-VI

1. State whether the following equation is a linear or non-linear differential equation:

(i) $\sin(y)\frac{d^2y}{dx^2} = (1-y)\frac{dy}{dx} + y^2\mathbf{e}^{-5y}$

(ii) $x\frac{dy}{dx} + 4y - x^3 = 0$

(iii) $logxdy + \frac{y}{x}dx = 0.$

2. Define homogeneous differential equation and give an example.

3. Find the degree and order of the following differential equations:

(i) $(x^4 + y^4)dx - xy^3dy = 0.$

(ii) $3x^4\left(\frac{dy}{dx}\right)^2 - \frac{xdy}{dx} - y = 0.$