Discrete Assignment

EE:1205 Signals and Systems
Indian Institute of Technology, Hyderabad

Abhey Garg
EE23BTECH11202

I. Question GATE AG 14

$y = e^{mx} + e^{-mx}$ is the solution of which differential equation?

II. Solution

$$y = e^{mx} + e^{-mx} \tag{1}$$

$$\frac{dy}{dx} = me^{mx} - me^{-mx} \tag{2}$$

$$\frac{d^2y}{dx^2} = m^2e^{mx} + m^2e^{-mx} \tag{3}$$

$$\frac{d^2y}{dx^2} = m^2(e^{mx} + e^{-mx}) \tag{4}$$

Using value of y from 1

$$\frac{d^2y}{dx^2} - m^2y = 0 \tag{5}$$