

EEE 225 - Engineering Mathematics I
(Differential Equations)
Homework 7

21st Nov, 2022

1. Solve

$$\frac{d^3y}{dt^3} + 8\frac{d^2y}{dt^2} + 45\frac{dy}{dt} + 116y = 0, \quad y(0) = 2 \quad \dot{y}(0) = -1 \quad \ddot{y}(0) = 3 \quad (1)$$

2. Find the kernel $K(t - \tau)$ for the system governed by

$$\frac{d^3y}{dt^3} + 16\frac{d^2y}{dt^2} + 81\frac{dy}{dt} + 126y = g(t) \quad (2)$$

3. Find the steady-state solution to

$$\frac{d^3y}{dt^3} + 2\frac{d^2y}{dt^2} + 4\frac{dy}{dt} + 5y = 2e^{2t} \sin 3t \quad (3)$$