

Assignment-5

1. Solve the following differential equation by the method of transforms.

(a) $y'' + y' - 6y = 1$, $y(0) = 1, y'(0) = 1$.

(b) $y'' + y = 3\cos 2t$, $y(0) = 2, y'(0) = 0$.

(c) $y'' + 2y' - 3y = \sin t$, $y(0) = 0, y'(0) = 0$.

(d) $y'' + 6y' + 8y = e^{-3t} - e^{-5t}$, $y(0) = 0, y'(0) = 0$.

2. Solve the following Integral Equation by using Convolution theorem

(a) $y(t) = 1 + \int_0^t e^{t-\tau} \sin 2\tau d\tau$

(b) $y(t) = t + \int_0^t e^{t-\tau} \cos 2\tau d\tau$

(c) $y(t) = t + \int_0^t e^{t-\tau} \cos 2\tau d\tau$

(d) $y(t) = 2t - 4 \int_0^t y(\tau)(t - \tau)d\tau$