MNS Department
Fall Semester 2024
Course Title:Mathematics for Machine learning and Signal Processing
Course ID: MAT 215
Assignment #3
Section:4

Lecture Modules:Laplace Transform

- Lapalace Transform
- Inverse Laplace Transform

0.1 Questions

1. Find the Laplace Transform of: $F(t) = (t+2)^3 e^{2t}$
2. Find the Laplace Transform of: $F(t) = \left(t^2 - 3t + 2\right) \sin 3t$
3. Evaluate: $\mathcal{L}^{-1}\left\{\dfrac{s}{(s^2+a^2)^2}\right\}$
4. Evaluate: $\mathcal{L}^{-1}\left\{\dfrac{s^2-3}{(s+2)(s-3)(s^2+2s+5)}\right\}$
5. Evaluate: $\int_0^\infty t^2 e^{-2t} \cos t \; dt$