Department of Electrical and Computer Engineering
Fall 2023  COMPREHENSIVE/BREADTH EXAM

Question 1

Laplace Transforms

This problem has 2 parts.

Part 1
Determine the Laplace Transform and region of convergence for the signals shown below:

a) Signal 1

\[ x_3(t) = |t|e^{-|t|} \]

b) Signal 2

Part 2
Determine the inverse Laplace Transform of the following signal over the following two regions:

a) Region 1: t<0

b) Region 2: t>0

\[ X_3(s) = \frac{s + 1}{s^2 + 2s + 2} \]