Department of Electrical and Computer Engineering

COMPREHENSIVE/BREADTH EXAM

<u>Question 1</u>   <u>Laplace Transforms</u>
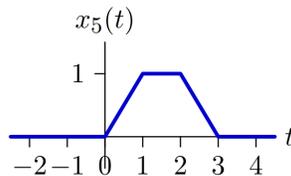

This problem has 2 parts.

<u>Part 1</u>
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

$x_5(t)$

<u>Part 2</u>
Determine the inverse Laplace Transform of the following signal over the following two regions:

a) Region 1: t<0
b) Region 2: t>0

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