

ECE 302 - Linear System Analysis

Homework #7

Due Date: October 29, 2025

1. Lathi & Green problem 7.1-7
2. Lathi & Green problem 7.2-3
3. Lathi & Green problem 7.3-2
4. Lathi & Green problem 7.4-4
5. **Laplace vs. Fourier Transform:** Suppose $x(t) = 5e^{2t}u(-t) + 2u(t - 1)$.
 - (a) Compute the two-sided Laplace transform of $x(t)$ directly from the definition.
 - (b) What is the region of convergence for your answer to part (a)?
 - (c) Is the Fourier transform of $x(t)$ equal to your answer from part (a) when $s = j\omega$? Explain.
 - (d) Determine the Fourier transform directly to verify your answer to part (d).