

## ECE 302 - Linear System Analysis

### Homework #3

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**Due Date:** September 17, 2025

1. Lathi & Green problem 1.5-2

2. Lathi & Green problem 1.7-5

**3. MATLAB Introduction:**

- (a) Get access to MATLAB (or some equivalent software package). See the course outline for more information on this.
- (b) Read the MATLAB overview in Section B.7 of your text.
- (c) Plot the function  $x(t) = e^{-|t|} \cos(2\pi t)$  using MATLAB.
- (d) Compute the energy in  $x(t)$  using MATLAB. Check your answer by hand. Does they agree?

*Remark:* Always present all your simulations results in this course in a clear, concise and professional manner. This means:

- 1. Provide the source code.
- 2. Title all plots and label all axes on all plots.
- 3. If more than one plot is on a single graph, supply a legend.
- 4. Explain your results. Is it what you expect? Why? If not, why not?

An unexplained or unintelligible presentation will not be graded and will result in zero credit.

**4. Angles of Complex Numbers:** Compute by hand the angle  $-\pi < \angle z \leq \pi$  of each complex number below.

- (a)  $z = -j$
- (b)  $z = 2 + j$
- (c)  $z = -1 - 2j$
- (d)  $z = -1$