

ECE 302 - Linear System Analysis

Homework #6

Due Date: October 22, 2025

1. Lathi & Green Problem 6.3-6
2. Lathi & Green Problem 6.3-10, part (a) only
3. Lathi & Green Problem 6.4-5
4. Lathi & Green Problem 7.1-6
5. **Simulink Introduction:** Consider an LTI system with transfer function

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

- (a) Compute the output of the system if the input is $x(t) = 2 \sin(4t)$, $-\infty < t < \infty$.
- (b) Simulate the system with MatLab's Simulink software. Does the simulated output agree with your calculation in part (a)? Explain in detail.
- (c) Repeat parts (a) and (b) if instead $x(t) = 2 \sin(100t)$.

Remark: Visit the MathWorks [website](#) for a tutorial on Simulink. Also, see the remark at the end of Problem 3 in Homework #3.