Homework Assignment 2
Discrete-Time Fourier Transform

ECEN 463 - Digital Signal Processing
Maxx Seminario

Due: October 22, 2025

Assignment Overview

This homework assignment focuses on the Discrete-Time Fourier Transform and its properties. You will work with transform pairs, properties, and applications of the DTFT to discrete-time signals and systems.

Instructions

- Complete all problems showing detailed work and explanations
- Submit your solutions as a **single PDF file** via canvas

Homework 2 Part 1: Textbook Problems (60 points)

Please complete the following problems from the course text, *"Discrete-Time Signal Processing"*, 3rd Edition, Oppenheim. Submit your solutions as a single pdf file.

Problems: 2.30abc, 2.31, 2.36, 2.38, 2.40, 2.45, 2.47, 2.54, 2.55, 2.58 (use MATLAB or similar for plots), 2.63, 2.65, and 2.67

Hints:

- 2.36c - One way for y[n] to be constant is if $|H(e^{j\omega})| = 0$.
- 2.55 - Use convolution sum formula

Academic Integrity

This is an individual assignment. While you may discuss general concepts with classmates, all submitted work must be your own. Copying solutions from other students, online sources, or solution manuals constitutes academic dishonesty and will result in a failing grade for the assignment.