

**ECE 301 (Section 001) Homework 1**  
**Spring 2025, Dr. Chau-Wai Wong**

*Gradescope Submission Note: When uploading your homework to Gradescope, please create links between the problems and your scanned pages, or your submission will not be graded. Click [here](#) for a tutorial on how to do this.*

**Problem 1** (40 points) (Calculus Prerequisite) Compute the following sums or integrals. We will use these calculations later in the course. You may find the reference equations in the Chapter 0 lecture notes useful. Use results on geometric sums to help in computing the summations.

1.  $\int_0^{\infty} e^{-t} dt$
2.  $\int_{-\infty}^{\infty} e^{-|t|} dt$
3.  $\int_0^{\infty} e^{\alpha t} dt$  where  $\alpha \in \mathbb{R}$ . Hint: Be sure to carefully consider the values of the real-valued variable  $\alpha$  as the integral does not always exist.
4.  $\int_{-2}^3 e^{-2t} dt$
5.  $\sum_{n=10}^{\infty} \left(\frac{1}{2}\right)^n$
6.  $\sum_{n=-10}^{\infty} \left(\frac{1}{2}\right)^n$
7.  $\sum_{n=0}^{10} \left(\frac{1}{2}\right)^n$
8.  $\sum_{n=0}^{\infty} z^n \left(\frac{1}{2}\right)^n$  where  $z$  is a real number. You will need to specify the values of  $z$  for which you can compute the summation.
9. List three sources that you may use for calculus review. This could be in the form of a web link to an online reference, link to video tutorials, name of a book you already own, etc. Please do not list any links to pirated material.

**Problem 2** (40 points) (MATLAB Prerequisite) Complete [the MATLAB Onramp course](#). Turn in your course completion certificate.

**Problem 3** (20 points) (Forming a Study Group) Following the instruction from [this Piazza link](#) to form a study group. Provide the names of all members (as of the submission) to score 20 points.

**Group Study (1', bonus)** In-Person: Take a selfie with all group members' faces in the photo. Capture in the photo the homework assignment sheet that you are working on. Zoom: Take a screenshot of the whole team with everyone's webcam capturing his/her face. One of you will share the screen showing the specific homework assignment sheet.

Include the screenshot/selfie in your own homework submission as the last "problem." Your screenshot/selfie gets you 1 bonus point; your group members need to do it separately to earn their bonus points.