

ECE 301 (Section 001) Homework 1, Spring 2023
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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 review. Compute the following sums or integrals. We will use these calculations later in the course. You may find the reference equations in the Chapter 1 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 variable α 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) Complete the MATLAB Onramp course. Turn in your course completion certificate.

Problem 3 (20 points) 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) 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 that you are working on. In-Person: Take a selfie with all group members' faces in the photo. Capture the homework assignment sheet in the photo.

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.