A main goal of this course is to develop our skill in mathematical communication. Two main forms of mathematical communication are

- speaking aloud at a chalkboard or whiteboard, and
- creating documents that display nicely-formatted mathematics.

The oral presentation, the LaTeX project, and the rewrite of the project are intended to give you practice performing these two tasks, which are not typically emphasized in mathematics courses at this level.

Due dates

- *Presentation.* By the end of the semester–but your TA may specify an earlier due date for your section.
- *Writing Project.* You're encouraged to do the writing project early, but the absolute deadlines are as follows: problem chosen and approved by 11/3; project due 11/17; final rewrite due 12/10.

1. The oral presentation

The oral presentation will be no longer than five minutes, and will take place at a time that is planned in advance with your TA. The oral presentation can take place during your discussion, during your TA's office hours, during the lecturer's office hours, or at another arranged time.

Choose a problem from the textbook that has not appeared on a quiz or test, and prepare to solve the problem and present your solution. Your TA must approve your choice. Each student in your discussion must choose a different problem. You and your TA might agree on a problem from a different source.

Present your solution by speaking aloud and writing at a chalkboard or whiteboard. The instructor might ask for clarifications and will ask follow-up questions relating to your problem.

Twenty points are possible on the oral presentation, broken down as follows with five points possible per part:

- mathematical validity of solution overall
- use of writing at the board
- use of spoken language
- understanding and responding to follow-up questions

2. The LaTeX project

LaTeX is a typesetting language that is particularly good at displaying mathematical symbols. Mathematicians tend to write using a system called LaTeX, as opposed to a word processor such as Microsoft Word. There is a learning curve, however; LaTeX is a markup language (much like HTML with webpages) which requires you to learn specific syntax for how to create documents and mathematical expressions.

As soon as possible, familiarize yourself with a LaTeX compiler that will convert plain text files that you create into `.pdf` documents. One popular online option is Overleaf (https://www.overleaf.com/). There are others, such as ShareLateX (https://www.sharelatex.com/) and SageMathCloud (https://cloud.sagemath.com/). **Beware: you must provide your TA with a valid LaTeX document** for this project, but some services

(such as ShareLaTeX) attempt to be "user-friendly" by compiling documents that have errors. As of this writing, Overleaf will not compile an invalid document, so it may be a safer choice for the project than ShareLaTeX.

You might prefer to install a free LaTeX compiler on your own computer, for example

- MacTeX (https://tug.org/mactex/) for Mac OS X, or
- TeX Live (https://www.tug.org/texlive/) for Windows and Linux.

LaTeX compilers are also installed on computers in CSE Labs.

We will post a sample LaTeXdocument on the course webpage which you can use as a template for your project. The document will include many of the symbols you might wish to use. You can also read the "How to Type Mathematics in Moodle" post in this course's Moodle Forum to learn the LaTeX code for common symbols.

As you will do for the oral presentation, choose a problem that has not appeared on a quiz or test. Your TA must approve your choice, and each student in your discussion must choose a different problem.

Your project consists of submitting to your TA a `.tex` file and a compiled `.pdf` document that contains your solution to the problem. Your TA must be able to compile the `.tex` file and create a `.pdf` file independently. It need not be longer than one page.

Twenty points are possible on the LaTeX project, broken down as follows with five points possible per part:

- `.tex` file compiles correctly with no errors
- mathematical validity of solution overall
- correct use of mathematical symbols
- quality of the mathematical writing, as described in the writing score rubric

3. LaTeX project rewrite

Your TA will respond to your LaTeX project solution with suggestions for improvement and/or additional follow-up questions. You will have one week to respond with changes and additions and submit a new `.tex` file and `.pdf` file.

Twenty points are possible on the rewrite, broken down as follows with five points possible per part:

- `.tex` file compiles correctly with no errors
- mathematical validity of the new content, in particular whether it addresses the TA's suggestions and questions
- correct use of mathematical symbols in the new content
- quality of the mathematical writing in the new content, as described in the writing score rubric