

MA541 Final Exam

Fall 2025

What

- The final exam is a written take-home exam.
- Graduate students will also present one of their problems/options
- Undergraduate students are not required to present, but may do so if they wish.
- You may choose from
 - **Option E** (text exercises),
 - **Option O** (outline of text sections), or
 - **Option R** (research in a related topic). See below for details.

When/Where

- Thursday, December 11th, 10:00 AM - JXJ 1315

Options

Option E - Exercises from the Text

Choose two exercises from the list below to complete. Write up your solutions & present **ONE** of them during the final exam period.

- Exercises: Act IV 10
- Exercises: Act IV 11
- Exercises: Act IV 12
- Exercises: Act IV 13
- Exercises: Act IV 14

Option O - Outlines of Text Sections

Choose one of text sections below to summarize/discuss.

- Guidelines:
 - Typeset detailed notes that you can use to support a short lecture on the subject. Present your outline during the final exam period.
 - * Use LaTeX (or an alternative typesetting system) to prepare your notes.
(or an alternative typesetting system) to prepare your notes.
 - * How do I use LaTeX? [overleaf](#) is a good online LaTeX editor.
 - * Thompson's "Get started with Overleaf" [tutorial](#)
- Discuss section 29.5.5 forward through section 29.8 in Needham's *Visual Differential Geometry and Forms*.
 - More detail expected here, compared to the sections below
 - Add a few examples not found in Needham
- Complete an outline of (as much of as possible) Acts V of Needham's *Visual Differential Geometry and Forms*.
- Complete an outline of Acts III-IV of Needham's *Visual Differential Geometry and Forms*.