

Extra Credit Mathematics Research Project **Calculus and Linear Algebra, Fall 2025**

Deadline: Week 13, Friday, November 14, 11:59 pm GST

This optional project gives you the opportunity to explore an advanced or creative topic related to Calculus or Linear Algebra. It can extend ideas from lectures, apply mathematical tools to new problems, or investigate theoretical questions.

Group Formation

- You may work individually or in groups of up to 3 students.
- Each group will submit one essay and make one short presentation.

Written Component — Formal Essay (5–10 pages)

Goal: Present a clear, rigorous mathematical exploration.

Requirements:

- Length: 5–10 pages (typed, double-spaced). This includes typesetting equations, whether in LaTeX or Word or the like.
- Include:
 - Introduction and motivation.
 - Definitions, proofs (as appropriate), derivations, examples, and any computational results.
 - Discussion or conclusion connecting your work to broader mathematical ideas.
- Style: Formal and precise — think of a short paper for a mathematics journal such as SIAM Undergraduate Research Online or a conference like ACM SIGGRAPH, ICCV, or CVPR (as inspiration for structure).

Presentation Component — Short Talk (3–5 minutes), likely in extra session

Goal: Share your work in an engaging and creative way.

Requirements:

- Length: 3–5 minutes.
- Format: Any format you like — PowerPoint, video, skit, animation, demonstration, or digital art inspired by your mathematics.
- Tone: Your goal is to make your topic interesting and accessible to classmates.

☒ **Submission Checklist**

☐ Group members listed (max 3).

☐ Formal essay (PDF, 5–10 pages).

☐ Short presentation file or link (3–5 minutes).

☐ Submit all materials by Week 13.