

Robert Sargent

Curriculum Vitae

College Park, MD, USA

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EDUCATION

PhD Program, Mathematics *University of Maryland, College Park (UMD)*

August 2025 – Present

Graduate Math Coursework, UMD

August 2023 – May 2025

Bachelor of Science, Mathematics, UMD

May 2023

Minor: Chinese

PUBLICATIONS

Minimum-Distortion Continuous Cartograms by Numerically Optimized Meshes

October 2025

doi.org/10.1080/23729333.2025.2545175 | [arXiv:2411.17129](https://arxiv.org/abs/2411.17129) | 27 pages

- Developed a new optimization method for creating cartograms (maps with smooth distortion to highlight population and other data)
 - Used JSON data and Python to create and render cartograms
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PREPRINTS

A Gasket Construction of the Koch Snowflake and Variations

February 2025

[arXiv:2502.00815](https://arxiv.org/abs/2502.00815) | 15 pages | Submitted, pending approval

- Described a new construction of the Koch snowflake that gives rise to a continuous family of fractals with rectangular symmetry
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TALKS

The Banach–Tarski Paradox *Directed Reading Program, UMD*

May 2023

- Summarized the proof of the Banach–Tarski paradox

Intro to Geometric Algebra *Directed Reading Program, UMD*

December 2022

- Described the use of geometric algebra to represent n -dimensional rotations
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OTHER RESEARCH

4D Geometry Project

July 2022 – August 2023

- Used Godot Engine to test implementation of four-dimensional geometry in code
 - Learned geometric algebra for representing and manipulating 4D rotations
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TEACHING EXPERIENCE

Graduate Teaching Assistant *Math Department, UMD*

September 2025 – Present

- Teach two discussion sections of Calculus III, explaining topics based on student questions
- Provide intuition and reasoning behind course concepts to deepen students' understanding
- Write and administer quizzes; grade quizzes and exams

Undergraduate Tutor *Math Department, UMD*

September 2021 – May 2025

- Tutored 2–4 students per day on 100- and 200-level math courses
- Explained difficult fundamental concepts, enabling them to find the answers themselves
- Built some students' understanding over multiple sessions

Grader *Math Department, UMD*

February 2021 – June 2021

- Graded proof-based assignments for MATH406: Introduction to Number Theory
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SKILLS

- Python (NumPy), JavaScript, Godot Engine
- LaTeX typesetting, Image editing (Paint.net, Inkscape), Video editing (Sony Vegas)