Quinn H. Brussel

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EDUCATION

Harvard University, Cambridge MA
B.A. in Mathematics (expected), 2025

EMPLOYMENT AND TEACHING

Harvard University, Cambridge, MA, January 2023-Present

Head Course Assistant: Math 101 (Sets, Groups, Geometry). Duties include teaching a weekly review section, grading assignments and holding office hours. I also manage the other course assistants.

Course Assistant: Math 113 (Complex Analysis), Math 131 (Topological Spaces and the Fundamental Group), Math 22b (Vector Calculus and Linear Algebra). Duties include holding office hours and grading assignments.

Harvard Model Congress, Boston, MA, September 2021-February 2024
Chaired mock-congressional committees for high school students. Helped students develop public speaking skills and knowledge of government. Staffed conferences in Boston, San Fransisco, and Seoul.

Evolv AI, Dublin, Ireland, June-August 2022
Intern, Programmer.
Worked on machine learning programs for image segmentation.

RESEARCH EXPERIENCE

Harvard Summer REU, Cambridge, MA, June-August 2024 – resulting in an original proof that the Frank number of cubic, 3-edge-connected, Hamiltonian graphs is always 2.

MANUSCRIPTS

Frank Number of Hamiltonian Graphs, Quinn Brussel, in progress.

TALKS

"Quasiconformal Mappings, Polynomial-like Mappings, and Self-similarity in the Mandelbrot Set," Harvard University Algebraic Dynamics Seminar, November 14, 2024

"Connectivity Properties of Hamiltonian Graphs," Harvard University Math Table, October 9, 2024

"Structure of the Mandelbrot Set," Cal Poly Simple Group, May 22, 2024

PROJECTS

Senior thesis on the conjectured local connectivity of the Mandelbrot set, in which we present the background, proof techniques, and partial results towards the conjecture.

Quinn Brussel, Rémi Drolet, AnaMaria Perez, *Modules of Differentials*, 2023 – An introduction to vector fields, 1-forms, and Kähler differentials.

Quinn Brussel, *Lattès Maps and Solving Polynomial Equations*, 2023 – An introduction to the theory of Lattès maps and an exposition of selected results from Curt McMullen's *Families of Rational Maps and Iterative Root-finding Algorithms*.

RUNNING

1st place (course record), Blackout Mountain Race 10k, November 2024
3rd place, TARC Spring Classic 50k, April 2024
2nd place, Blackout Mountain Race 10k, November 2023
1st place, TARC Fall Classic 50k, September 2023
2nd place, Tahoe Rim Trail Endurance Run 56 mile, July 2023
2nd place, TARC Fall Classic 50 mile, September 2022

Marathon Personal Best: 2:45:45 (2025)

SKILLS AND INTERESTS

Interests: Mathematics, Mountain/Ultra Running, Cycling, Music, Playing Guitar, Rock Climbing, Mythology, Philosophy

Programming Languages: C, Python, HTML, CSS, SQL, Javascript, R, Mathematica

Languages: Intermediate Spanish and French