

# Math Circles in Rural Indiana

Math Circles in Rural Indiana is a new initiative from within the Mathematics Department at Indiana University Bloomington which aims to launch in Fall 2024. Our initiative is modeled after successful Math Circles run by university departments around the country, but with the added vision to aid and support mathematics education in our rural communities.

Our math circle will meet in an after-school setting, once a week, for one hour. We will bring projects, problems, puzzles, and a few snacks for 20-30 students. We aim to create a relaxing, no-pressure environment for students to try puzzles and problems. We hope that students begin to see that the core of mathematics is curiosity and leave our program with a drive to understand. We want our participants to feel comfortable making mistakes - because this is how we learn math.

- Provide a safe, no-pressure environment for mathematical learning
- Engage students with projects and mathematical ideas that they don't often see in a classroom setting
- Help students recognize that making mistakes is part of learning
- Increase the likelihood of our participants attending college
- Provide a benefit for participants from diverse backgrounds in rural areas

**Estimated Budget:** \$2,500.00/Semester (~\$167 / event, ~\$6 / student)

- Mentor stipends: \$1,500.00 (\$50.00 per event per mentor, 2 mentors + unpaid director)
- Materials: \$150.00 (average \$10.00 per event)
- Snacks: \$300.00 (average \$20.00 per event)
- Transportation: \$550.00 (average \$0.625/mile, 40-60 miles per event)
- Marketing / Flyers: \$200

# Meet our team!



**Josh Southerland**  
**Director & Mentor**

Josh is a Zorn Postdoctoral Fellow in the Mathematics Department at Indiana University Bloomington where he studies dynamical systems, geometry, and representation theory. He has a PhD in mathematics from the University of Washington. Prior to joining the PhD program, he worked as a mechanical engineer for seven years.

He co-directed the Washington Directed Reading Programs for 3 years at the University of Washington. The program pairs undergraduate mentees with graduate student mentors for a reading project which culminates in final presentations at the end of the quarter. He secured funding for the program, ran an application process, paired mentees with mentors, provided food for several events throughout the program, and surveyed participants.

He has taught mathematics in a classroom setting for the past five years. During that time, one student wrote:

"Josh's easygoing nature and selfless approach to teaching eliminated any sort of toxic or competitive atmosphere that is all too common in STEM courses; the focus was on learning and nothing else."

He received the "Max Zorn Teaching Award" from the Mathematics Department at Indiana University. He has also received the "Excellence in Teaching" award from the Mathematics Department at the University of Washington, and was twice nominated for a university-wide "Excellence in Teaching" award.

Dami Lee is a Visiting Lecturer in the Mathematics Department at Indiana University Bloomington. Beginning Fall of 2023, she will be an Assistant Professor at Oklahoma State University. She was previously a Postdoctoral Scholar at the University of Washington in Seattle. She has a PhD in mathematics from Indiana University Bloomington.

Dami has taught various undergraduate math courses ranging from calculus to linear algebra, analysis, and geometry. She has also participated in Foundations in Science and Math program (FSM). FSM is an outreach program that IU graduate students run during the summer for local high school students. Dami designed and taught math courses from algebra, trigonometry, precalculus, and advanced calculus. One student wrote:

"Although it was challenging, it boosted my confidence a ton, which is something I lack. ... After completing your class it helped me believe in myself that if I really put my mind to it and persevere, I can do it."



**Dami Lee, Mentor**

# Meet our team!

Sanjana is a lecturer of mathematics at Indiana University and the director for the math learning center. The most crucial aspects of her job involve educating students who are not mathematics majors and to create a help center that provides an ideal environment and facilities for students needing math help. As a lecturer, her classrooms are designed with an aim of creating a safe learning environment, with a high priority towards working in groups using inquiry based learning techniques so that the students actively engage with the mathematical ideas and problem solving approaches. As a math learning center director and instructor, she trains our graduate and undergraduate assistants towards running group help sessions, facilitating math discussion amongst peers, understanding and addressing the needs of different students on their terms using effective communication skills and providing constructive feedback (positive and negative) to the students work that helps them become more independent and confident learners.



**Sanjana Agarwal, Mentor**



**Lawford Hatcher, Mentor**

Sergei Kopylov has a master's degree in mathematics (Moscow State University '19). During the spring 2019 I was an instructor of a Math Circle serving two classes at a school in Moscow. Currently, Sergei is a 2nd year PhD student in the Department of Mathematics, IU Bloomington.



**Sergei Kopylov, Mentor**