GREG KNAPP

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EDUCATION

University of Oregon August 2017–June 2023
PhD, Mathematics June 2023
Dissertation: "Polynomial Root Distribution and Its Impact on Solutions to Thue Equations"
Advisor: Shabnam Akhtari
Overall GPA: 4.10

Case Western Reserve University August 2013–August 2017
Bachelor of Science, Mathematics May 2017
Bachelor of Arts, Philosophy May 2017
Master of Science, Mathematics August 2017
Thesis: "Minkowski's Linear Forms Theorem in Elementary Function Arithmetic"
Advisor: Colin McLarty
Overall GPA: 4.0

RESEARCH AND PRESENTATIONS

Research Papers

- "The Number of Solutions to the Trinomial Thue Equation." Accepted for publication in *Functiones et Approximatio Commentarii Mathematici*. Preprint available at https://arxiv.org/abs/2210.09631.
- "Polynomial Root Distribution and Its Impact on Solutions to Thue Equations." Electronic Thesis or Dissertation. University of Oregon, 2023. *ProQuest Dissertations and Theses.* https://www.proquest.com/dissertations-theses
- "Minkowski's Linear Forms Theorem in Elementary Function Arithmetic." Electronic Thesis or Dissertation. Case Western Reserve University, 2017. *OhioLINK Electronic Theses and Dissertations Center.* https://etd.ohiolink.edu/

Upcoming Talks

- "Bounds on the Number of Solutions to Thue's Inequality." PIMS Postdoctoral Fellow Seminar. Online (October 11, 2023).

Previous Research Talks

- "Bounds on the Number of Solutions to Thue's Inequality." Oregon State University Number Theory Seminar. Corvallis, Oregon (February 2023).
- "Bounds on the Number of Solutions to Thue's Inequality." University of British Columbia Online Number Theory Seminar. Vancouver, British Columbia (December 2023).
- "Bounds on the Number of Solutions to Thue's Inequality." Portland State University GDMNT. Portland, Oregon (November 2023).
- "An Improvement on a Gap Principle Counting Technique and Some Consequences." New York State Regional Graduate Mathematics Conference, Syracuse University, Syracuse, NY (April 2022).

- "An Improvement on a Gap Principle Counting Technique and Some Consequences." Oregon Number Theory Days, Oregon State University, Corvallis, OR (February 2022).
- "Convex Geometry and Minkowski's Linear Forms Theorem in Elementary Function Arithmetic." Master's Thesis Defense, Case Western Reserve University, Cleveland, OH (April 2017).
- "Factorization Properties of Int($\mathbb{Z}$)" (with J. Salem and G. Scullard). Joint Mathematics Meetings—Undergraduate Poster Session, Atlanta, GA (January 2017).
- "Non-Unique Factorization, Elasticity, and Catenary Degree in Int($\mathbb{Z}$)." Pi Mu Epsilon Meeting, Case Western Reserve University, Cleveland, OH (September 2016).
- "Factorization Properties of Int($\mathbb{Z}$)" (with J. Salem and G. Scullard). Young Mathematicians Conference—Report Talk, The Ohio State University, Columbus, OH (August 2016).

Expository Talks

- "On Diophantine Approximation." Student Number Theory Seminar, University of Oregon, Eugene, OR (June 2023).
- "What Everyone Should Know About Polynomials." Student Number Theory Seminar, University of Oregon, Eugene, OR (February 2023).
- "When Do Polynomials Have a Real Root?" Student Number Theory Seminar, University of Oregon, Eugene, OR (November 2022).
- "On Thue's Equation." Student Number Theory Seminar, University of Oregon, Eugene, OR (October 2022).
- "Quadratic Reciprocity via Lucas Polynomials." Student Number Theory Seminar, University of Oregon, Eugene, OR (May 2022).
- "Galois Connections." Student Number Theory Seminar, University of Oregon, Eugene, OR (February 2022).
- "Why The Golden Ratio is the Worst." Math Slam Seminar, University of Oregon, Eugene, OR (October 2021).
- "An Introduction to Thue's Inequality." Student Number Theory Seminar, University of Oregon, Eugene, OR (October 2021).
- "Newton Polygons." Student Number Theory Seminar, University of Oregon, Eugene, OR (April 2021).
- "Introducing and Visualizing the p-adic Numbers." Student Number Theory Seminar, University of Oregon, Eugene, OR (January 2021).
- "How to Tell if a Number Field is Formally Real." Student Number Theory Seminar, University of Oregon, Eugene, OR (November 2020).
- "Geometry of Numbers and Its Number Theoretic Applications." Student Number Theory Seminar, University of Oregon, Eugene, OR (October 2020).
- "Dirichlet Series and Why the Sum of the Natural Numbers is (Not) $-1/12$." Student Number Theory Seminar, University of Oregon, Eugene, OR (October 2020).
- "Introduction to the Weil Height." Student Number Theory Seminar, University of Oregon, Eugene, OR (October 2020).
- "Why the Golden Ratio is the Worst: Approximation and Continued Fractions." Student Number Theory Seminar, University of Oregon, Eugene, OR (January 2020).
- "The Basics of Modular Forms." Student Number Theory Seminar, University of Oregon, Eugene, OR (June 2019).

- "The Geometry of Numbers and Minkowski's Linear Forms Theorem." Student Number Theory Seminar, University of Oregon, Eugene, OR (February 2019).
- "Galois Theory In Peano Arithmetic." Student Number Theory Seminar, University of Oregon, Eugene, OR (May 2018).
- "Minkowski's Convex Body Theorem in Elementary Function Arithmetic." Graduate Notions Seminar, University of Oregon, Eugene, OR (November 2017).

TEACHING EXPERIENCE

University of Calgary August 2023–Present
PIMS Postdoctoral Fellow

- Taught coordinated courses as instructor of record.
  - Math 211—Linear Methods I

University of Oregon August 2017–June 2023
Graduate Employee

- Taught courses as both the instructor of record and as a teaching assistant.
- Courses for which I have been instructor of record:
  - Math 105—University Mathematics I
  - Math 111—College Algebra
  - Math 112—Elementary Functions
  - Math 242—Calculus for Business and Social Sciences II
  - Math 251—Calculus I: Differentiation
  - Math 252—Calculus II: Integration
  - Math 253—Calculus II: Sequences and Series
  - Math 347—Fundamentals of Number Theory I
  - Math 348—Fundamentals of Number Theory II
- Courses for which I have been a teaching assistant:
  - Math 111—College Algebra
  - Math 241—Calculus for Business and Social Sciences I
  - Math 242—Calculus for Business and Social Sciences II
- Other educational opportunities:
  - "Preschool" Instructor—I co-ran a two week long problem solving session with incoming first-year PhD students to help them decide which classes to take during their first year.

Case Western Reserve University January 2015–May 2017
Peer Tutor

- Served as a peer tutor for about 8 hours per week.
- Tutored in the following classes:
  - Calculus I, II, III
  - Differential Equations

- Linear Algebra
- Abstract Algebra
- Intro to Logic
- Math Logic and Model Theory

· Assisted in the creation of the spring 2016 training sessions.

Boonshoft Museum of Discovery Summer 2013, 2014, 2015, 2017
Summer Educator

· Created and taught three week-long summer camps: a math/logic/computer science camp, a computer programming camp, and a creativity/teamwork focused camp.
· Collaborated with a co-worker to create and teach the math portion of a week-long STEM camp.
· Taught several public programs: designed and demonstrated science experiments to the museums' guests
· Served as a camp counselor for summer campers (ages 6–14): escorted campers to and from classes and positively interacted with the campers within their classes.
· Organized museum spaces (lab, staff room, classrooms).

MENTORING

University of Oregon Directed Reading Program January 2023–April 2023
Continued Fractions

· Mentored an undergraduate reading project on the measure theory of continued fractions.
· Met once per week with my student to discuss the second half of A. Khichin's *Continued Fractions*.
· Advised the student's 20 minute presentation on Khinchin's Theorem.

University of Oregon Directed Reading Program January 2020–April 2021
Formal Logic

· Mentored an undergraduate reading project in formal logic, ranging from the Gödel's Incompleteness Theorem to subsystems of Peano Arithmetic.
· Met roughly once per week with my student January–March 2020 and July 2020–December 2022.
· Student read selections from chapters 1, 2, and 4 of Goldstern and Judah's *The Incompleteness Phenomenon* and from chapter 1 of Hájek and Pudlák's *Metamathematics of First-Order Arithmetic*.
· Student gave a 20 minute presentation on the first-order system of Peano Arithmetic.

University of Oregon Department of Mathematics August 2019–June 2023
First-Year Mentor

· Mentored first-year mathematics graduate students.
· Met formally once per quarter and informally more frequently with my mentees to ensure that they were doing well during their first year.

SERVICE AND MEMBERSHIPS

Acta Arithmetica — June 2023–Present
Referee

UO Graduate Student Teaching Seminar — December 2019–March 2023
Co-organizer

UO Graduate Student Chapter of the AWM — August 2019–June 2023
Member and Co-chair of the K-12 Outreach Committee

UO Graduate Student Chapter of the AMS — July 2020–October 2022
Co-founder, Secretary

UO Graduate Student Number Theory Seminar — March 2021–September 2022
Organizer

Periodica Mathematica Hungarica — January 2022–June 2022
Referee

UO Math Department Graduate Affairs Committee — August 2019–June 2021
Elected Student Representative

Boonshoft Museum of Discovery — June/July 2012 and July 2016
Camp Counselor

Cleveland School of the Arts — August 2013–December 2013
Math, Science, and Writing Tutor

HONORS AND AWARDS

Anderson Graduate Teaching Award for teaching dedication and excellence as a graduate student.

John Schoff Millis Award for the senior with the best academic record in the College of Arts and Sciences at CWRU.

Outstanding Poster Award for the top 10% of poster presentations in the Undergraduate Poster Session of the Joint Mathematics Meetings, 2017.

Dean's High Honors (8 semesters) at CWRU.

Member of the 2nd place team in the Ohio MAA Student Team Competition 2016.

Case Alumni Association Junior-Senior Scholarship recipient.