Aadrita Paul

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Education

Class X (ICSE)
Vidyashilp Academy, Bengaluru, Karnataka
Graduated in 2021
Attained 97.4%

Class XII (ISC) - PCMC
Vidyashilp Academy, Bengaluru, Karnataka
Graduated in 2023
Attained 96.5%

(Current) B.Sc. Honors in Mathematics and Computer Science
Chennai Mathematical Institute
Third Year Undergraduate Student
Present CGPA of 9.40

Courses:
- **Mathematics:**
  - Semester I- Algebra I (Linear Algebra), Analysis I
  - Semester II- Algebra II (Group Theory), Calculus I, Probability
  - Semester III- Algebra III (Rings, Fields, Modules), Analysis II, Calculus II, Combinatorial Group Theory (Additional Elective)
  - Semester IV- Complex Analysis, Topology, Differential Equations
- **Computer Science:**
  - Semester I- Introduction to Programming (Haskell)
  - Semester II- Advanced Programming, Discrete Mathematics
  - Semester III- Theory of Computation, Design and Analysis of Algorithms
  - Semester IV- Logic Automata and Games, Programming Language Concepts
- **Physics:** Classical Mechanics I
- English

Achievements

- 2023: Attained a rank of 7 in entrance examinations for Indian Statistical Institute, Bangalore (B.Math.)

- 2023: Awarded the Shriram Scholarship by CMI which included a tuition fee waiver and a fellowship

- 2024: Attained a rank of 18 and won a Cheer Prize in the Madhava Mathematics Competition, a national competition for undergraduate students of Mathematics

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Other Qualifications

- I did a reading project on Combinatorial **Group** Theory under Prof. Parameswaran Sankaran, CMI during summer 2024. We covered the first quarter of the book 'Combinatorial Group Theory' by Lyndon and Schupp. I then took an additional elective on Combinatorial Group Theory under him in my third semester.

- I also participated in the 2024 Madhava Nurture Camp in Summer 2024

- I was a Teaching Assistant for Introduction to Programming (Haskell) in my third semester which involved grading, coming up with questions for assignments, and teaching tutorials.

- I was also a Teaching Assistant for English in my third semester which involved grading assignments and teaching a few classes.

- In December, 2025, I did a reading project on Combinatorial **Game** Theory under Prof. Urban Larsson, IIT-Bombay where I read through his lecture notes (IE619 2023 IITB), the book 'Surreal Numbers' by Don. E. Knuth and learned to use the software C.G. Suite to study combinatorial games.

- My reading project in Combinatorial Group Theory led to an interest in Knot Theory, so in my fourth semester I did a reading project on Knot Theory with Dr. Tanushree Shah (PDF, CMI) where we mainly studied Virtual Knots. I read through parts of 'Knots, Links and Their Invariants: An Elementary Course in Contemporary Knot Theory' by A. B. Sossinsky, 'Knot Theory' by Vassily Manturov and various research papers.

- I am currently participating in the Summer Students Research Programme at TIFR-CAM and doing a research project under Dr. Nishant Chandgotia. The main focus is on studying various tiling problems, especially through a group theoretic angle and also looking into proofs of related undecidability problems. So far:

  - I have read through the proofs of undecidability of various famous problems including the Domino Problem, the Word Problem and Adian-Rabin Theorem, and the full proof of the solution to Hilbert's 10th problem.

  - I have read six chapters of 'Groups, Graphs and Trees: An Introduction to

the Geometry of Infinite Groups' by John Meier.

- ○ I have read chapters 11 and 12 of 'An Introduction to the Theory of Groups' by Rotman (which included concepts like Todd-Coxeter Coset Enumeration, Complexes etc.)

- ○ I have read the papers 'Tiling with Polyominoes and Combinatorial Group Theory ' by Conway-Lagarias and 'Conway's Tiling Groups' by Thurston. I am currently trying to investigate the tiling groups introduced in these papers further, and also apply to them to some tiling problems.

- ○ I am doing a formal write-up on a solution to a tiling problem we discussed, and I also wrote a computer program to visually demonstrate the algorithm.

- ○ I read the first two chapters of 'An Introduction to Symbolic Dynamics and Coding' by Lind and Marcus

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I am mostly interested in the discrete side of mathematics; I like Group Theory and Combinatorics and I enjoyed my Discrete Mathematics and Theory of Computation courses. I like to joke that my interests are exactly that of mathematician J.H. Conway, since he has shown up majorly in almost all the reading that I have done.

I also like programming (I am familiar with Java, Python, Haskell, JS/HTML/CSS and a bit of Ruby) and solving puzzles in my free time.