

Gaurav Goel

Preferred Name: Dhruv

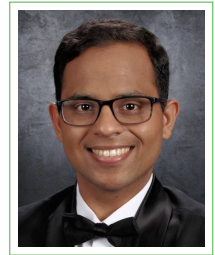
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Education

- 2024 **(Expected) A.B., Harvard University, Cambridge, MA.**
Anticipated double concentration in Mathematics and Germanic Studies with a secondary in Music.
- 2019 **Pace Junior Science College Andheri (PJSC), Mumbai, India.**
Highest score out of over 550,000 candidates in the Maharashtra HSC Examinations in Science 2019.
- 2017 **Thakur Public School (TPS), Mumbai, India.**
Valedictorian.

Research, Publications, and Expository Writing

- [1] On Powerful Integers Expressible as Sums of Two Coprime Fourth Powers (with [Noam D. Elkies](#)). *Res. Number Theory* **9**, 78 (2023) (proceedings of ANTS-XV, 2022). doi: [10.1007/s40993-022-00415-9](https://doi.org/10.1007/s40993-022-00415-9)
- [2] The Chow Ring Classes of PGL_3 -Orbit Closures in $\mathbb{G}(1, 5)$. 2022. [\[arXiv Preprint\]](#)
Presented at the HCURA [National Collegiate Research Conference \(NCRC\)](#) 2023.
The following articles are in preparation.
- [3] Chow Classes of the Varieties of Secant and Tangent Lines to a Projective Variety. Advisor: [Hannah Larson](#).
- [4] The Atiyah-Singer-Hirzebruch-Riemann-Roch Theorem. Senior thesis. Advisors: [Joe Harris](#) and [Dan Freed](#).
Several other expository articles are available on [my webpage](#).

Academic Honors, Awards, and Research Funding

- 2023 **Phi Beta Kappa (PBK), Senior 48**, national academic honor society. See [this article](#).
- 2023, '22, '20 **John Harvard Scholarship, Harvard University**, honorary scholarship for students in the class top 5%.
- 2022 **Joint Fellow, Herchel Smith Undergraduate Science Research Program**, and **Program for Research in Science and Engineering (PRISE)**. \$4500, research funding for [2].
Conducted original research as part of the Harvard Summer Undergraduate Research Village (HSURV).
- 2020 **Harvard College Research Program**. \$2700, research funding for [1].
Conducted remote supervised research in number theory.
- 2019, '18 **Merit Award, Indian National Mathematics Olympiad (INMO)**
Awarded by the National Board for Higher Mathematics (NBHM) of India to the top 60 scorers.
- 2017 **Thakur Ramnarayan Memorial Award, TPS**

Positions

Harvard Undergraduate Gender Inclusivity in Mathematics (HUGIIM)

- 2022 - 23 **Co-president**: Organized projects and socials, collaborated with other inclusivity organizations, and served as student representative in the Math Department Community Committee.
- 2021 - 22 **Mentorships Co-Chair**: Co-organized the *Math Includes* mentorship program.
- 2021 - 22 **Manager, Harvard Glee Club Lite**: managed the a cappella subset of the Harvard Glee Club.

Teaching and Mentorship

Course Assistant, Department of Mathematics, Harvard University

Led discussion and review sessions, held office hours, graded homework, and prepared solutions.

- Spring 2024 **Math 222: Lie Groups and Lie Algebras**, taught by [Noam D. Elkies](#) (scheduled)
- Fall 2023 **Math 213A: Advanced Complex Analysis**, taught by [Curt McMullen](#); see the [course webpage](#).
- Spring 2023 **Math 129: Number Fields**, taught by [Salim Tayou](#)
- Fall 2022 **Math 114: Analysis of Function Spaces, Measure and Integration**, taught by [H. T. Yau](#)
- Spring 2022 **Math 132: Differential Topology**, taught by [Dennis Gaitsgory](#)
- Fall 2021 **Math 55A: Honors Group Theory and Abstract Algebra**, taught by [Denis Auroux](#)
In addition, served as a volunteer course assistant for the following.
- Spring 2021 **Math 132**, taught by [Joe Harris](#)
- Spring 2021 **Math 55B: Honors Real and Complex Analysis**, taught by [Denis Auroux](#)
- Fall 2021 **Math 55A**, taught by [Denis Auroux](#)
- Summer 2021 **Counselor and Course Assistant, Ross Mathematics Program USA**
Led discussion sessions for a group of high school students for a course on number theory. In addition, served as course assistant for *Rational Points on Curves*, an advanced course on arithmetic geometry aimed at counselors taught by [Stefan Patrikis](#).
- Summer 2020 **Course Head, Math 57, Math Online Summer Program (MOSP)**
Taught group theory to high school students as part of a program organized by [Alec Sun](#).
- 2018 - 19 **Teaching Assistant, Math Olympiad Program, PJSC**
Taught students in grades 8 through 12 advanced math in preparation for the IMO.

Talks

- Nov 2022 **Emmy Noether: Mathematician Extraordinaire**, [HMMT](#) Education Session
- Feb 2022 **The Three-Sphere in Dante's *Divine Comedy***, HMMT Education Session
- Nov 2021 **The Inverse [Quadratic] Central Potential and the Cubic Equation**
Harvard Society of Physics Students (SPS), Undergraduate Chalk Talks Series
- Aug 2021 **Galois Cohomology and Hilbert's Theorem 90**, Ross 2021, Dorm Lecture for *Rational Points on Curves*
- Nov 2020 **What Is Algebraic Geometry and Why Do We Care?**, HMMT Education Session
- Oct 2019 **Fermat's Little Theorem and its Applications to Cryptography**, Harvard University Math Table

Arts

- 2022 - **Member, Harvard University Choir**, and [Ferris Choral Fellow](#) for AY 2023-24.
- Feb 2022 ***Bard, If A Picture Never Lies*, Harvard Classics Club**
Baritone in the premier of Sage's *If A Picture Never Lies*. See [this article in the Harvard Crimson](#).
- 2021 - 23 **Member, Harvard Choruses New Music Initiative**
- 2019 - 23 **Fellow, Holden Voice Program**
- 2019 - **Member, Harvard Glee Club**

Other

- Software: Python, Java, SageMath, Pari/GP, Macaulay2
- Languages: English (first language), Hindi (first language), German (third year of college instruction)