

# Sai Sivakumar

Email: [sivakumars@ufl.edu](mailto:sivakumars@ufl.edu)

DoB: July 27<sup>th</sup>, 2002

Cell: (904)–708–0721

[github.com/metalninja27](https://github.com/metalninja27)

## ■ Goals

Seeking to obtain a B.Sc. in mathematics, then to earn a Ph.D in mathematics; I do not know which specialization it would be in.

## ■ Education

*August 2020 - present:* Working on B.Sc. in Mathematics with a 3.98 GPA currently, University of Florida (UF).

*August 2016 - June 2020:* Graduated with IB diploma with a 4.00 GPA, Stanton College Preparatory High School.

## ■ Talks and Presentations

*February - March 2022:* To be expected. Will give a series of lectures/talks which briefly outline Fourier analysis on finitely generated abelian groups with some neat results, as they appear in Stein and Shakarchi I.

*October 2021:* Gave the annual L<sup>A</sup>T<sub>E</sub>X joint seminar with the UF Graduate Mathematics Association. This seminar is designed to demonstrate how L<sup>A</sup>T<sub>E</sub>X works and what it can do, and to encourage mathematics students to learn L<sup>A</sup>T<sub>E</sub>X.

*June 2021:* Discussed the integral definition of the inverse Laplace transform, as well as how to compute the integral using the residue theorem, at an elementary level. ([YouTube](#))

*March 2021:* Gave a talk on proving the fundamental theorem of calculus at a highschool/pre-real analysis level. ([YouTube](#))

## ■ Skills

3+ years of L<sup>A</sup>T<sub>E</sub>X experience (high proficiency).

Proficiency in Java, C++, and understanding of data structures and algorithms.

## ■ Outreach/Service

*September 2021 - present:* Member of the Algebra seminar group.

*August 2021 - present:* Teaching assistant for MAP2302 Elementary Differential Equations.

*August 2021 - present:* Member of the Association for Women in Mathematics' UF chapter.

*August 2021 - present:* Academic Director of the University Math Society at UF. I schedule all talks from professors and give talks myself, as well as encouraging other students to give talks as well.

*March 2021 - present:* Moderator for a large online community (exceeding 75,000 members globally) which seeks to stimulate mathematical discussion and interest, as well as to provide assistance with math problems/concepts.

*August 2020 - December 2020:* Typed up many solutions for *Concepts in Calculus III* by Miklos Bona and Sergei Shabanov (around 47 pages or so, working with two others to form in total 141 pages of solutions compiled in a solution manual).

*August 2019 - February 2020:* Started a small unofficial mathematics club (in highschool) where students presented on topics of mathematical interest; there I gave three informal talks.

## ■ Honors/Awards

*Fall 2020, Spring 2021, Summer 2021* Dean's list.

2020 National Merit Scholarship Commended

2020 National AP Scholar

## ■ Relevant Coursework

*From most recent to earliest, and items marked by a <sup>†</sup> are graduate or mixed graduate/undergraduate level courses:*

*MTG4303<sup>†</sup>:* Introductory Topology II – (Self-studied material found in the first semester before enrollment in this course.) Second semester of introductory topology, covering basic algebraic topology and more topics in point-set topology. Chapters 5-6, 9-12 Munkres

*MAA4212:* Advanced Calculus II – Second semester of introductory real analysis, covering analysis in metric spaces and theory of functions of several real variables. Professor's notes. Spring 2022

*MAP4341<sup>†</sup>:* Introduction to Partial Differential Equations – Elementary theory of solving partial differential equations. Professor's notes and lectures. Spring 2022

*MAT4930<sup>†</sup>:* Introduction to Algebra II – Second semester graduate level algebra; covering rings, fields, modules. Chapters 7-13 of Dummit and Foote. Spring 2022

*MAA4211:* Advanced Calculus I – First semester of introductory real analysis. Chapters 1-7 of Abbott. Fall 2021

*MAS4413:* Fourier Analysis – Elementary theory of Fourier analysis. Chapters 1-7 of Stein and Shakarchi I. Fall 2021

*MAT4930<sup>†</sup>:* Introduction to Algebra I – First semester graduate level algebra; covering group theory. Chapters 1-6 from Dummit and Foote. Fall 2021

*MAP4305:* Ordinary Differential Equations – Second course in ordinary differential equations. Covered methods of using matrices for systems of linear ODEs, the method of Frobenius for second order ODEs, solving regular Sturm-Liouville boundary value problems, and using Green's functions. Professor's lectures. Summer 2021

*MAA4402:* Introductory Complex Analysis – Elementary theory of functions of a complex variable. Chapters 1-7 of Brown and Churchill. Spring 2021

*MAS4105:* Introductory Linear Algebra – Proof-based linear algebra. Chapters 1-6 of Friedberg, Insel, Spence. Spring 2021

*MAS4203:* Introductory Number Theory – Elementary concepts in number theory. Chapters 1-3 of Niven and

Zuckerberg. Spring 2021

*MAS4301*: Introductory Abstract Algebra – Elementary group theory. Chapters 1-11 of Gallian. Spring 2021

*MAC3474*: Honors Calculus III – Basic multivariable calculus. Chapters 1-5 of *Concepts in Calculus III* by Miklos Bona and Sergei Shabanov. Fall 2020

*MAP2302*: Honors Elementary Differential Equations – Covered how to solve various basic ODEs, basic notions of existence and uniqueness, and applications to physics. Chapters 1-8 in Nagle Saff Snider 7th edition. Fall 2020

*MHF3202*: Sets and Logic – Taught elementary set theory and how to write basic proofs. Chapters 1,2,3, 5-10, 12, 14 in Book of Proof by Richard Hammack. Fall 2020