

# Aidan Backus

## Curriculum vitae

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### Education

- 2016–2020 **B.A. Mathematics**, *University of California, Berkeley*, Major GPA: 3.9.
- Math 202B, Topology and Analysis - Spring 2019, taught by Prof. M. Rieffel
  - Math 250B, Commutative Algebra - Spring 2019, taught by Prof. R. Borcherds
  - Math 222B, Partial Differential Equations - Spring 2019, taught by Prof. M. Zworski
  - CS 170, Efficient Algorithms and Intractable Problems - Fall 2017, various instructors

### Work experience

- 2018–present **Reader**, *Department of Mathematics, UC Berkeley*.  
Responsible for reading homework and assigning grades to students, as well as lecturing and answering student questions when professor is absent.
- 2016–present **Math tutor**, *self-employed*, Berkeley, CA.  
Responsible for tutoring students in undergraduate math courses, especially linear algebra.
- 2017 **Food service worker**, *Cal Dining*, Berkeley, CA.

### Volunteer experience

- 2011–present **Designer and Administrator**, *Wikia*.  
Responsible for web design and data mining at the Final Fantasy Wiki, including introducing Python bots which maintain wiki structure, and parsers that maintain wiki databases using game data with tens of thousands of entries, as well as approving CSS used for front-end design.
- 2018–present **Academic Chair**, *Mathematics Undergraduate Student Association*, Berkeley, CA.  
Responsible for organizing a seminar where undergraduates can learn proof-writing skills in small groups in preparation for major coursework, and redesigning the MUSA website to be easier to update on the back-end and more aesthetically pleasing on the front-end.
- 2017–2018 **Outreach Chair**, *Mathematics Undergraduate Student Association*, Berkeley, CA.  
Responsible for organizing Shadow a Math Major Day, for prospective UC Berkeley math students, in which high school seniors can visit campus and experience life as a Berkeley math student, and the Berkeley Undergraduate Mathmentoring Program, in which first and second-year undergraduates can receive insight and advice from more advanced students.
- 2017 **Academic intern**, *Department of Computer Science, UC Berkeley*.  
Responsible for running labs teaching students introductory computer science, especially recursion and interpreter design.
- 2016 **Director**, *Open Computing Facility*, Berkeley, CA.  
Responsible for building servers and voting on uses of funding.
- 2018–present **Violist**, *Intermission Orchestra @ Cal*, Berkeley, CA.

2017 **Problem writer**, *Berkeley Math Tournament*, Berkeley, CA.

## Projects and research experience

Summer 2018 **Linking within-host and between-host HIV dynamics**, *with C. Chavez, et al.*, Prof. N. Vaidya.

We develop mathematical models linking between-host and within-host dynamics of HIV, estimating parameters and simulating populations as necessary, demonstrating the effect of antibody profile on the probability of transmission.

Fall 2018 **Formalizations of analysis**, *solo*, Prof. W. Holliday.

We provide an overview of Bishop's constructive analysis and qualify his claim that classical analysis is an approximation to "constructive truth."

Spring 2018 **Notes on Complex Analysis**, *solo*, Prof. C. Hadfield.

We provide expository notes on advanced complex analysis, including Harnack's monotone convergence theorem and the Riemann mapping theorem.

Fall 2017 **Baire classes and the Borel  $\sigma$ -algebra**, *solo*, Prof. C. Pugh.

We show that for each uncountable Polish space  $P$  and a countable ordinal  $\alpha$ , there exists an  $\alpha$ -Baire function on  $P$ .

## Teaching experience

2016-present **Tutor**, *Math 54*, Linear Algebra and Differential Equations, self-employed.

Spring 2019 **Lecturer**, *Math 198*, Introduction to Proof-Writing, UC Berkeley.

Spring 2019 **Reader**, *Math 105*, Second Course in Analysis, UC Berkeley.

Fall 2018 **Reader**, *Math H104*, Honors Introduction to Analysis, UC Berkeley.

Spring 2017 **Reader**, *Math 104*, Introduction to Analysis, UC Berkeley.

Fall 2017 **Academic intern**, *CS 61A*, Structure and Interpretation of Computer Programs, UC Berkeley.

## Presentations

Fall 2018 **Within-host and between-host viral dynamics**, *Mathematics Undergraduate Student Association's Math Mondays*.

## Computer skills

Languages Python, Java, Lua, Lisp, CSS, SQL  $\LaTeX$

Other MATLAB, MediaWiki, Adobe InDesign, GNU/Linux, Git, Excel

## References

Available upon request.

## Interests

Running, tabletop RPGs, MMO raiding, web design, viola performance