

## Some Advice for Early-Career Graduate Students<sup>4</sup>

You are about to read an advice column on graduate study from a writer with deep experience in the matter. Once, long ago, I was a graduate student—I was a rising first-year PhD student at Harvard almost exactly a half-century ago. A few years after I finished my PhD, I began mentoring graduate students at UC Berkeley. To date, I have been the official advisor of about two dozen students. In addition, I have served a term as graduate director in my department; in that role, I advised dozens of beginning graduate students on strategies for choosing an advisor and beginning work.

We all have different perspectives, and no piece of advice will be useful for everyone. Nevertheless, I hope that the comments that I am about to make will be helpful to at least some of you. For those of my readers who are looking for an executive summary, here's the main point: when you're an early-career mathematician, don't be in a rush.

### Shop Around

Take your time when selecting an advisor. Perhaps the majority of first-year students in math PhD programs have very narrow ideas about what they'd like to pursue. Even if you are nearly certain about what you'd like to study and who your advisor is likely to be, I urge you to keep an open mind and explore the resources that your new department offers. In my department, students often find new directions after speaking with advanced graduate students, attending a seminar talk, or enrolling in a topics course. It is extremely common for students to become excited about subjects that were not represented in their undergraduate institutions.

One reason behind my suggestion about shopping around is that most of us are lopsided in our talents and interests. Wait until you find an advisor whose research matches your mathematical strengths and whose personality and work habits seem compatible with yours.

### Don't Be Too Specialized

Chat about mathematics with several faculty members, even after you've begun working with an advisor. It is a mistake to conclude that working with Professor X prevents you from talking shop with Professors Y, Z, and W. Odds are that there will be other faculty members in your department who are interested in your research topic. In addition, discussing mathematics with people outside your specialty will give you broad exposure to contemporary mathematics.

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### No Champing at the Bit

Ignore the administrators' emphasis on "time to degree." There's no hurry to file your dissertation. Students who are leaving a program and applying for positions are judged in large part by their list of publications. It's best to have more than one substantial piece of research already completed before leaving graduate school and perhaps even more important to have additional projects in the pipeline before beginning a position that involves professional activities that compete with research.

### Conclusion

Did I mention that there's no need to rush? Your PhD program is an opportunity to explore, experiment, and broaden your base of expertise. If you are leaning toward a career outside academia, you may want to think about the skills that you'll need in your future workplace. Foremost among those skills is *communication*—being able to identify a mathematical problem from a description that is not couched in technical language and being able to explain your own work to colleagues who are not trained in rigorous mathematical thinking. Be sure to have some fun. Fifty years from now, you may find yourself recounting your adventures to budding mathematicians who are about to start their graduate work.



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