My teaching methodology is informed primarily by my belief that students learn mathematics not by observing, but by talking about, thinking about, and (most importantly) doing math. This viewpoint has led me to adopt an interactive style, which engages the students and requires constant input from them, and also includes an emphasis on in class exercises in small groups, with me providing help and guidance as needed. It is also an important part of my job to support the students' learning outside the classroom, where most of their time is spent. This support involves both being available when possible as they are grappling with homework exercises and the underlying mathematical concepts, as well as guiding them to external resources that can be helpful when I am not available. It is worth noting that, as a graduate student, my experience thus far has been in coordinated calculus courses, where I have embraced and met the challenges that come with teaching these courses. While I look forward to teaching more such courses, I also eagerly anticipate the new challenges that will come from teaching, and even designing, non-coordinated and upper-level courses. Below I describe in more detail some of my practices inside and outside the classroom that I feel make me an effective teacher.

Inside the classroom. I typically divide the time spent in the classroom striking a balance amongst three activities: lecturing, working examples, and small group problem sessions. Lecturing is essential for expositing new material, but it has limitations. In my experience, both as a teacher and a student, internalizing a new mathematical concept requires not just a lecture, it requires solving a variety of problems that reveal the underlying subtleties. This has led me to put an emphasis on in class problem sessions. The third activity, working examples, serves as a bridge between introducing a new concept in a lecture and these problem sessions.

When lecturing and working examples, I believe that clarity is essential, and fosters clear thinking in the students. This first of all means clear presentation, with clean organized board notes using markers or chalk that write bold and visibly, and using color effectively in figures and to highlight ideas. It also means being mindful of clarity in my exposition of the concepts I am teaching, carefully building a bridge between what the students already know, and a new idea.

Equally important to clarity is inclusion of the students in the lecture by frequently asking questions. I make it clear from the beginning of the course that students should be prepared to be active participants in the class. Early on, I put considerable effort into learning the students' names. This allows me to call upon them by name to draw them into the discussion, ensuring that a few students do not volunteer for the bulk of the questions. When working an example, I typically call on students to complete each step—even trivial ones. If they don't know the answer, I try to guide them in the right direction in a way that reminds them of how they should be approaching the problem. For example, when asked for the integral of $\frac{1}{x^2}$, a student may get stuck, but if I suggest they write it a different way, they naturally think to rewrite it as x^{-2}, at which point they immediately know the answer.

After I have introduced a concept, and the students have had a chance to see it in action with concrete examples in class, I like to let the students spend some time working on problems in small groups. This gives them a chance to work in a setting where they have access to immediate feedback, both from myself and from their peers. Besides its immediate benefits, group work improves class cohesion, and oftentimes leads to collaborative study outside of class. In my view, one important way that students learn is through the process of trying a problem, getting stuck, struggling with it then possibly getting help, understanding their mistake, successfully finishing the problem, then immediately doing another similar problem, or several. This process often breaks down when students work on their own. When they have no source of feedback or help, they have to wait to resolve difficulties until the next class period or office hours, and progress is slowed. Of course it should be

said here that there can be value to not getting immediate help with a problem—this is especially true for students in upper-level proof based courses.

Outside the classroom. Besides lecturing and other in class activities, part of my job as a teacher is to help the students outside the classroom. One of the first, and I think most important, things that I do to this end is offering a small extra credit incentive for students to make a first visit to my office, during the second or third week of class. In this meeting I ask about their mathematical background, current class and work load, and how they are feeling about the material in the course so far. I also encourage them to come back to see me if they need help or are falling behind, and to take advantage of campus tutoring resources when I am not available. Besides allowing me to get to know the students better, this meeting gives them a chance to get to know me, and to see that coming to my office for help is as easy as showing up. Even with the initial extra credit office visit, some students are still hesitant to come to office hours. One solution I have found to this problem, which I have implemented for past classes, is to dedicate a portion of my office hours to a weekly problem session, which is held in a classroom where there are fewer distractions than in my shared office. In my experience students are far more likely to attend a problem session than to come to office hours, and this can be a huge help for students who are struggling with the material.

There are many other resources, both at Temple and in the community, that bolster and encourage mathematical inquiry at every level. Despite my busy schedule as a graduate student, I have frequently given my time to support such activities. This has ranged from guiding lessons for pre-K children at Math Circles, a program that seeks to nurture and encourage early mathematical development, to co-organizing a conference for over a hundred graduate students in Geometry, Algebra, and Topology. The aforementioned conference has been held at Temple for the past three years, and I have been involved throughout, most notably serving as a primary organizer in its second year. I have also volunteered with Temple's Sonia Kovalevsky Day, a day of mathematical activities for girls in 5th through 8th grades, which involved assisting with lessons in the classroom, and preparing a contest for participants. Currently I serve as the graduate advisor for the Temple University Undergraduate Math Club, where I act as a liaison between the math club and the graduate students—this involves recruiting grad students to give talks, as well as helping Math Club events run smoothly. This past summer I was lucky enough to be invited to Georgia Tech to act as a visiting mentor to a talented group of undergraduates, for an REU in geometric group theory. While there I gave two talks about my research, and in another talk introduced the students to a computer program for working with surface homeomorphisms, called flipper. I also worked closely with one of the groups as they worked through the beginning stages of developing their own program. Going forward, I hope to be able to continue mentoring undergraduate research, as well as participating in other mathematical outreach programs for students at all levels.

The above description of my current approach to teaching is a snapshot which will no doubt evolve with time. When I first started teaching three years ago I focused primarily on lecturing, and scheduled office hours with the hope that I would be able to get some of my own homework done during them. Not long after, I participated in Temple University's Teaching in Higher Education course and practicum, which helped me to be more reflective of my teaching practices, and exposed me to new ideas about and approaches to teaching that have helped shape my current teaching philosophy. Looking forward, I am excited for the opportunity to grow further as a teacher, and to share my love of mathematics with a new class of students.