When I teach mathematics, I aim to reveal to my students – no matter who they are – that they have a greater apptitude for math than they realize. During my time as a graduate student, I have served as either an instructor or TA for ten courses. In three of these courses, I was the course head, responsible for every aspect of the course, and two these were instances of a summer course which I conceptualized, proposed, had accepted, designed, and taught, and which has been adopted into the yearly Summer@Brown curriculum. I have also mentored four advanced undergraduate reading projects. From these experiences I have learned that university mathematics education must accomplish manifold objectives: teach students to use precise reasoning, prepare students to apply mathematical techniques in a wide range of other fields, help students develop an understanding of deep mathematical ideas that is both rigorous and intuitive, and many others. I have found that a major step toward accomplishing these objectives is to show students that they are within reach.

I believe that all humans love to learn and to understand, and I want my students to love math. Students who love a subject are able to focus with less effort, are more energetic in their quest to understand, are more resilient in the face of setbacks, and more readily help their peers learn. And an appreciation for mathematics can be a source of beauty that enriches a human life. One of the most fulfilling experiences I have had as a mathematics instructor has been the opportunity to introduce high school students to Peano Arithmetic. Students are awed to discover that behind the mundane facts of addition and multiplication lie not dubious inductive reasoning or unsatisfying hand-waving but elegant and rigorous proofs founded on the simplest of axioms describing counting. Watching students make this discovery is like seeing them react as handfuls of sand metamorphose into gemstones before their eyes.

Unfortunately, many – perhaps most – people are deeply intimidated by mathematics. There is typically little gray area between right and wrong in math, so that answering a question in a math class can feel like a much riskier proposition than speaking up in a course on a different subject. And when students get swept up in the idea that math is about memorizing inscrutable formulae, they understandably write the subject off as uninspiring. Worse, math has been cursed with a reputation for being a "smart person's" subject, not worth persuing for anyone who doesn't have the knack for it, and this problem is exacerbated by stereotype threat. A few negative early experiences with mathematics can color a students' perception of the subject and of their own abilities for many years, and for students from underrepresented backgrounds, negative social messaging both implicit and explicit can magnify self-doubt.

The anxiety engendered by all of these factors is an enormous impediment to learning, and my first priority as a math instructor is to dissipate it. I create a safe and warm environment for my students with my patience, compassion, and affability. Students who ask questions help me to teach better by giving me the opportunity to clarify points that other students may also be wondering about, and I make sure that students who ask questions in my classes know that I am grateful for their contributions by giving friendly, thorough, and patient explanations and by thanking them when I finish answering. When I solicit solutions to a problem in class and a student volunteers an incorrect answer, I empathize with the student's thought process and highlight all of the correct insights that the student made along the way before explaining where the error occurred. By being supportive and encouraging, I have had success fostering and maintaining student engagement and interaction in my classes, including among students of underrepresented genders and ethnicities. I take great pride in playing my small part to counteract the inestimable harm that has been done to the discipline of mathematics, to individuals, and

to humanity as a whole by centuries of excluding much of the human population from the study of mathematics.

Beyond creating a safe and welcoming atmosphere, I endeavor to help students understand a topic from as fundamental a level and from as many perspectives as possible. I treasure when my students ask me "why" and I am never content to address such an important question with perfunctory symbol manipulations without elucidating the geometric intuition or larger logical structure lying behind a concept. On a larger scale, I work to proactively detect and fill the gaps in my students' knowledge. Feeling unprepared is another common source of anxiety for mathematics students and, needless to say, because of the progressive nature of sequential mathematics courses, it hampers their ability to understand and learn new material. When appropriate, I take time in class to fill these gaps. Although prima facie this delays progression through the course material, I have found that it pays dividends in student confidence and progression down the line.

Office hours are also crucial to addressing gaps in student knowledge, since some will present with idiosyncratic gaps unlikely to be shared with other students and which it is inappropriate to spend classtime addressing. Because of the importance of meeting and communicating with students outside of class for the purposes of filling gaps in background knowledge, addressing problems that arise outside of class, and other functions, I not only offer ample office hours scheduled to best coincide with my students' availability but make sure my students know that I will also answer questions and explain topics over email or Zoom if need be.

Because different topics in mathematics require different styles of quantitative reasoning, I adapt the format of my instruction as appropriate. In all of my teaching, I work to develop students' fundamental understanding of the material, instill a nimble and creative approach to problem solving, and solicit continuous student participation in order to maintain engagement and ensure that students are following along. In lower-level classes, I teach primarily in an interactive lecture format. In these classes, I thoughtfully prepare and demonstrate examples that open up new perspectives on the topic at hand. In more advanced classes involving proof-writing, I incorporate more group brainstorming sessions. These opportunities for mathematical cross-pollination stimulate student creativity by exposing students to many approaches to solving a problem, alleviate frustration as group members help each other past obstacles, and build confidence and fluency by asking students to think about how to best convey their ideas to their peers. I apply the same philosophy to my homework assignments: I favor problems at a range of difficulty levels that challenge students to think creatively and to see the material from a new perspective, and I encourage students to work together on the assignments.

I strive to practice quality teaching, self-reflection, and pedagogical growth and innovation. As a first-year, I received a semester-long instructor training taught by the department's senior-most master instructor, and I have sought out and received extra opportunities to teach during the summers. When the coronavirus pandemic caused instruction to move online, I successfully applied myself to learning the skills required by the new format. Each semester that I have taught or TAed, I have received thoughtful feedback from a more senior instructor that has helped me to hone my craft. I look forward to continuing to grow as an instructor in a new institution, with a different environment and different students. I feel that I know my craft well and I expect to be honing and improving it for the rest of my life.