I propose to discuss my motivation for teaching, my teaching methods, my teaching experience, and my future intentions in regard to teaching in the paragraphs below.

Mathematics entices me with its impressive historical record of acknowledged importance to human thought, a record that stretches from before Ancient Greece and its philosophers, through the Middles Ages when the trivium-quadrivium held academic dominance, to the modern day in which mathematics is the common glue of much of the scientific enterprise; and also with its aesthetic appeal which permits the parallel between a graceful mathematical argument and elegant prose; with its powerful sense of certainty transcendent of the intrinsic inadequacy of the empiricism of sense-perception; and with its subtle but resolute applicability to all modes of human thoughts - thoughts impossible to develop without rigorous logic and the abilities to think abstractly and to formulate precise questions.

When it comes to teaching, there are two obvious reasons for one to teach - the need for useful employment, and the artisan’s pleasure in demonstrating his or her art. But there are many things to do in the world, and one can display one’s artistry outside of the classroom - so why teach? In asking myself that question, I find that I feel a sense of obligation to both those who preceded me, and those who are to follow me. I would like to give my prospective students the same joy and advancement my mentors have kindly given me. That, and the pleasure and mutual learning derived from face-to-face human contact normative for the teacher but exceptional for, say, the archetypical researcher buried in his books, is a cardinal reason for my commitment to teaching.

That is “why” I teach mathematics. As to “how” I approach teaching, my ethic focuses on professionalism and encouragement. In regard to professionalism, I try to: never be late, dress decently, maintain cordial relations with the students, respect academic fairness, grade papers as quickly as possible, enter class properly prepared, and cover the curriculum clearly and thoroughly. These technical aspects of the teaching profession require no elaboration. Attending to such details makes teaching easier, but, self-evidently, is not the final cause of teaching.

My second principle - encouragement - aims at the development of a tolerance toward mathematics in those students who dislike the subject, an affinity in those who do not mind mathematics, and excellence in those who possess the qualities of a potential mathematician. To that end, I strive to maintain semi-formal - though strictly professional - and friendly relations with my student. I find this attitude makes students more comfortable and raises class attendance, participation, and enjoyment on the part of the students. While in class, moreover, I try to keep the students’ attention via the occasional quip but more generally by insistently provoking them into asking questions. When students ask questions, in effect they tell me they are interested, and they force me to see things from their perspective - it’s a win-win situation - we both learn. I put great effort into rendering complex notions accessible to all students, principally by focusing on core ideas from which one can easily derive more general results, and by using explanatory graphs as much as possible - since, for example, Riemannian sums can appear recondite in their algebraic form, but seem clear graphically.
Outside of class, I try to be accessible by giving interested students more than the mandated minimum of my time when appropriate or necessary. In particular, I often hold “review sessions” before exams, and make sure to arrange to meet those students who are willing but unable to attend scheduled office hours. In addition, I try to challenge and intrigue the more advanced students with occasional references to material and problems that go beyond the curriculum.

Quizzes and exams are integral to the system of university mathematical instruction as currently practised. When I write quizzes, I try to review recent material via the problems I compose. Moreover, I like my quizzes to contain both easier problems similar to examples covered in class, and tougher problems that follow from results established in class. If necessary, I accompany the harder problems with leading hints. The easier problems build up the students’ confidence, and the tougher ones provide a challenge and separate the better prepared students from the rest.

The above principles have served me well in my four years of teaching as a teaching assistant in graduate school at the University of Southern California. During the school years, I typically spent six hours per week lecturing on Tuesdays and Thursdays, three hours tutoring various students, including many not enrolled in my classes, in “office hours,” and some hours grading and composing quizzes and downloadable solutions to quizzes. I taught the first levels of calculus, statistics, linear algebra, ODEs, and Matlab programming; and, in addition, advanced calculus and senior-level probability theory. I find that I have enjoyed teaching. I have the impression that my classes generally appealed to the students as well.

I aim to constantly improve my teaching methods in the future - and also to challenge myself by tackling both higher-level and lower-level classes. Higher-level, because teaching analysis to math-majors is entirely unlike teaching calculus to students of all sorts of academic background. There is far more one can accomplish in an analysis class, and from my own experience on the student’s end of the classroom, I suspect that teaching high-level mathematics classes would be highly rewarding. At the same time, I could certainly teach calculus and statistics classes, since I already possess the necessary experience, and since such classes present interesting challenges of their own - because one can argue that the motivated would-be mathematician can take care of himself, and hence the ones who need the most help are precisely those students who struggle with mathematics.

As a specific way of improving my teaching methods, I would like to read up on the history of mathematics so as to be able to provide historical contexts in class. Relating of Gauss’s childhood accomplishments and Galois’s bizarre fate can be amusing, and addressing the debates behind issues such as the nature of zero, the uncountability of the real numbers, and the problems posed by the infinitesimals can provide students with much needed philosophical motivating background. As an apropos, I would enjoy instructing in “math circles” - meaning extra-curricular programs held on campuses and aimed at advanced grade-schoolers.

Finally, teaching need not be confined to personal interaction or to the classroom - ideally, a student can learn on his or her own given enough motivation and good books. I believe I would enjoy writing books in mathematics of various levels. I would write lecture notes - to be expanded into textbooks if possible - where appropriate when preparing for class; I would organize my research in textbook form as it accrues; and some day I would systematize the ideas I picked up as a child into advanced grade-school level booklets oriented toward students interested in mathematical competitions. I anticipate that the process of writing will be as pleasant as the act of teaching so often is.