Basically, my research is driven by one question: what types of measurements describe a mathematical object? Suppose I have a function that takes in numbers and returns numbers. What types of mathematical measurements do I need to take, in order to decide that this function is always returning the number zero no matter what number I choose to input? In particular, how much information do I need about an object to be able to decide it is zero? Many counterintuitive things happen in the realm of harmonic analysis, which is the study of how we can express (somewhat arbitrary) functions in terms of other basic building block functions. These phenomena seem to tell you the object you are looking at is zero, but then it turns out that the object isn't zero on a very small set. You can either study the bad behavior or study the good behavior by assuming that the bad things don't happen in your realm. Either way you get interesting results.

In applications, the bad sets don't exist. So when I return to the work I began in graduate school in the applied realm, I might have a way of describing a particular way to do signal processing, the area of mathematics and electrical engineering that governs such processes as sending pictures as e-mail attachments. When my post-doctoral mentor and I finish our current project, we will have theorems about abstract objects. Fortunately, both have their value in my profession.

Women in mathematics are still a minority. Although almost 30 percent of new Ph.D.s in math are women, we do not see nearly that proportion of women in the upper ranks of the tenured full professors. For example, it is very possible to walk into a research talk at a conference and realize you are the only woman in the room. I believe women and men are socialized to relate differently about many things, especially mathematics. For example, if I tell another woman mathematician that I am stuck in a proof of a theorem, she knows I am not admitting defeat; she knows that I am just working through my frustration. Having time with other women, not to complain about our experiences as much as to hold each other up and encourage each other in a venture that can erode anyone's confidence (man or woman), is an important part of my professional life.

Actually, my favorite math courses tended to be the ones in which I had to work the hardest. There is an unfortunate perception in our society that people are either good at math or not. I feel fortunate that my Agnes Scott professors instilled in me the belief that if you work consistently and with an inquisitive mind, you will get somewhere, eventually. During my first semester at the College, I was placed in Calculus III, and after a few weeks of class, I begged Professor Myrtle Lewin to let me drop down to Calculus II. She would not let me drop her class, but she did not leave me to my own devices. She worked with me at least once a week, and by the end of the term I was almost certain that I was going to major in mathematics. I struggled in Calculus III more than I struggled in any other college course, and even more than in some at the graduate level. The other course that stands out is the senior problem-solving seminar, one of the last I took at Agnes Scott. I wish I had been part of one of those seminars every term I was in college.

Professor Michael Brown's history, Professor Linda Hubert's literature and Professor Donna Sadler's medieval art classes were highlights of my non-major courses. I looked forward to them consistently and appreciated all the reading I had to do for them
Did c yo0hanDid csestsid56ed8521 atiD16rown'