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A Day in the Life of Marielle Gardner at Desmos

MELISSA BEERBOWER

I had the pleasure of meeting Marielle Gardner in April 2025. We met over Zoom and had a delightful and meaningful conversation about her path to becoming a mathematician.

I would like you, too, to meet Marielle Gardner, a mathematician working for Desmos Studio PBC who has a passion for expanding our understanding of who can be a mathematician and what it means to be one. She has a successful mathematical career and was invited to give a talk at the Joint Mathematics Meeting in Seattle in January 2025. Despite these accolades, Marielle sometimes feels as though she does not have the right to take up space in the mathematics world. It might seem odd at first that she would feel out of place in the math world, especially given her job at Desmos, a mathematical company ubiquitous in university classrooms across the United States, in high schools, on standardized tests, and on AP and IB exams. What could be a more mathematical career than this?

On the other hand, if you share a similar background or have had similar experiences to those of Marielle, you might relate to her feelings. Marielle is a woman of color of CHamoru descent. She is completing her master's degree in mathematics at the University of Kansas, without current plans to pursue a Ph.D. After working at Desmos for several years, she aims to learn more mathematics to support her career. Crucially, she is now taking traditional mathematics coursework to support her existing career rather than as a hurdle to overcome

so that some in academia might deem her a mathematician. So, the real question might be this: When, if ever, do you get to feel like a mathematician?

After interviewing Marielle, I think that her story frames her answer to this question in a way that speaks directly to the experiences of many undergraduates.

Figure 1. Marielle Gardner.



Marielle has always been a math person and fondly remembers asking her parents for long-division problems to solve for fun during elementary school. By the time she reached high school, however, she had absorbed the commonplace messaging that math is not for girls, and she enrolled in a liberal arts college, Saint Mary's College of California. The math classes at Saint Mary's were nontraditional: Marielle describes a class in which they read through Euclid's Elements and discussed each proof. She picked up a math minor and revitalized her desire to be a mathematician. At the 2019 Joint Mathematics Meeting, Marielle's first time attending this conference, she met Dr. Rebecca Garcia, the first CHamoru woman to earn a Ph.D. in theoretical mathematics (please visit indigenousmathematicians.org/profiles/

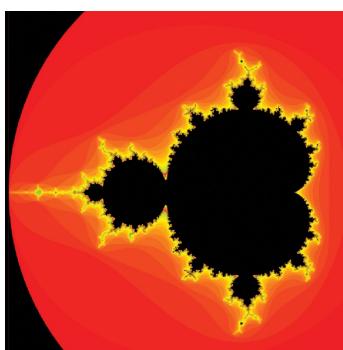
for her biography as well as profiles of other Indigenous mathematicians). For the first time, Marielle could imagine a person like herself being a mathematician. After her graduation in 2019, she headed into a mathematics Ph.D. program at Iowa State University.

The transition to traditional math academia was difficult but, in addition to the creative and inspiring approach to mathematics at St. Mary's, Marielle also received crucial diversity-conscious support. In summer 2020, she attended Enhancing Diversity in Graduate Education (EDGE), an eight-week summer program designed to prepare women and gender-nonconforming students to enter traditional math academia (more information about EDGE can be found at www.edgeforwomen.org). EDGE equips participants for challenging graduate topics such as analysis, algebra, measure theory, and machine learning and for the qualifying exams they need to take to obtain a doctorate. The program also builds a cohort for graduate students who might not be able to find support in the math community. Marielle attended EDGE virtually.

When Marielle began the graduate program at Iowa State, she thought that becoming a math professor would be the best path to fulfill her goal of sharing her love of math with others. Teaching in the classroom was not like the tutoring she loved, though. Marielle sums up the difference between tutoring and teaching in two words: collaboration and individuality. As a tutor, her relationship with students is collaborative, and the individual experience and background of each student and of herself as a tutor is important. In contrast, as a university teaching assistant (TA), the atmosphere is more contractual and less respectful of individuals. Marielle recalls teaching a calculus class of predominantly white, male engineering students. Managing these students was difficult—notably more difficult for Marielle than for her fellow TAs. In contrast, classroom management was significantly less difficult for her when teaching college algebra, which had more diverse enrollment. These experiences contributed to Marielle deciding that becoming a professor did not align with her goals.

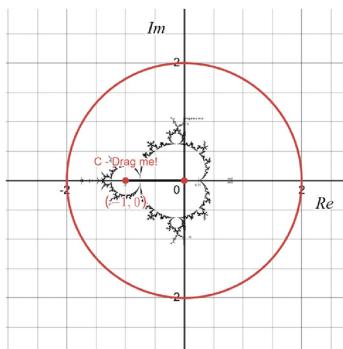
Ultimately, Marielle chose to drop out of the Ph.D. program in large part because of the unsustainable hours coupled with unreliable prospects for postdocs. There were no boundaries on the number of hours she worked as a TA, when she might be expected to do her work, not to mention studying for her own

Figure 2. The Mandelbrot set, created in Desmos.



<https://WWW.desmos.com/calculator/dgclzng5h3>

Figure 3. Another visualization of the Mandelbrot set, created in Desmos.



<https://WWW.desmos.com/calculator/x2lwsvuqw7>

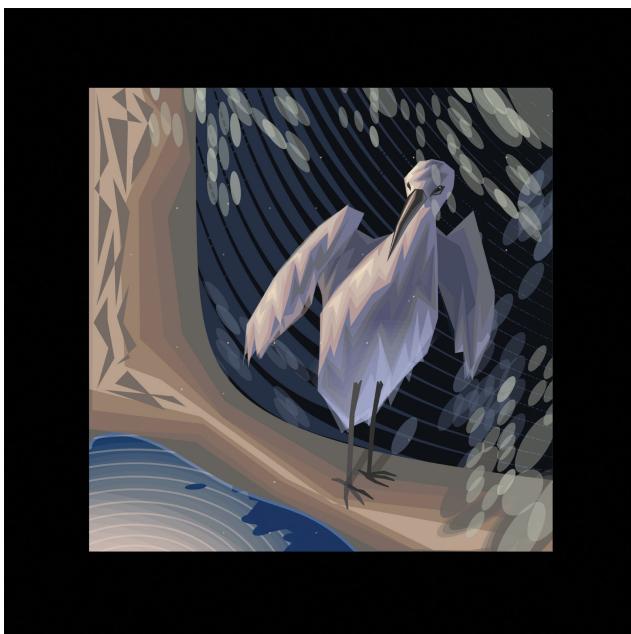
classes. Her well-being was not a factor in how the program set expectations for graduate students and the pay was poor with no significant hope of improvement for many years. These sacrifices might have been worthwhile if she still wanted to be a professor, but that was no longer the case. Instead, she found passion in her new full-time tutoring job.

It was during a tutoring session that she saw a job listing for a role on the user support team at Desmos. During the application and interview process, Marielle leaned into the mission of Desmos, and how she wanted to share her love of

math with others. In addition, because the listing came out right after Desmos was added to the digital SAT, she emphasized her experience as a tutor using the tools with students.

At Desmos, about 20 to 30 percent of Marielle's role is answering tickets, questions from users that range from things like how to save a graph, how Mandelbrot sets work, and how to use Desmos's new complex number graph. Her responsibilities also include updating the help center with information on new features, such as the complex functions graphing calculator. Desmos is a small company: When Marielle joined the team there were around 20 people, and now there are about 30 employees. Marielle loves the yearly art contest (see figure 4 and <https://www.desmos.com/art> for some amazing Desmos creations) and is currently enjoying working on Desmos's assessment projects: providing calculators for SATs, ACTs, and IB and AP exams.

Figure 4. “Modular Lifetimes” by Sequoia Leger.
Desmos 2024 Art Expo.



The mission of Desmos aligns well with Marielle’s values. It aims to be open to everyone and support anyone in being a math person. One of its strengths is its reliability to the point of invisibility. At one point, Marielle recounts that Desmos placed an advertisement for their yearly art contest on their calculator site. A user remarked that Desmos had been one of the few places on the Internet that you could be without distractions and advertisements. The Desmos team immediately removed the ad to maintain their mission of accessibility and usability.

Not only does Marielle’s role at Desmos require a background in mathematics, she also draws heavily on her college education. She says that strong writing and presentation skills are the most transferable skills from academia to industry. Being able to analyze a topic and turn around and present it clearly and confidently in her own words to other people is her most valuable academic skill.

Marielle has three intertwined messages for undergraduates:

- 1) You can be a math person.
- 2) If you want to be a mathematician, your well-being should take up space on your math journey.
- 3) You are a mathematician if you do math.

Her key message is that no matter what you look like or where you are from, you can be a math person. Our world runs on mathematics and being a math person in the context of your life puts you in a position of strength.

Desmos’s mission is to be part of equipping anyone to be a math person as much as they need or want to be. If you choose to be a mathematician, your path will not look like anyone else’s path. Marielle reminded me that we need to be open to opportunities that don’t look exactly like what we imagined and to allow ourselves to choose the opportunities that support our well-being. Our identities do not obligate us to be mathematicians in a certain way. Finally, Marielle reminds us that if you are doing math as a professor, an engineer, a researcher, a support technician, or an economist, or are doing math in any of a myriad ways, you are a mathematician. You can claim the title and take up space in the math world. ●

Melissa Beerbower is a graduate student at the University of Wisconsin-Milwaukee. A nontraditional student who worked for over a decade as a housekeeper and nanny before attending college, she is passionate about equity in academia. Her goal is to conduct research in combinatorics and algebra.

No potential conflict of interest was reported by the author.

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Mohammad K. Azarian Scholar Award



The Mathematical Association of America (MAA) is thrilled to announce the establishment of the **Mohammad K. Azarian Scholar Award**, a new honor celebrating excellence in mathematical problem creation. This award recognizes individuals whose original, thought-provoking problems challenge and inspire the mathematical community.

Honorees will be selected from contributors to MAA publications—*The American Mathematical Monthly*, *Mathematics Magazine*, *The College Mathematics Journal*, and *Math Horizons*—as well as from problem creators featured in the American Mathematics Competitions (AMC), AIME, the Putnam Competition, and the Mathematical Olympiad Program (MOP). By spotlighting outstanding problem creators, this award reinforces the vital role of problem-solving in advancing mathematical thinking and education.