

## The Mathematician Who Made Me Feel Like I Belong

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Interviewee: Anne Gelb

The first time I met Dr. Anne Gelb, I was exhausted. I had arrived on campus just the night before, and my first class was Math 8 an infamously difficult course. I was not looking forward to it. Yet, when I hesitantly raised my hand that first day, uncertain about my understanding, Dr. Gelb reassured me that I did understand. That moment changed everything. Until then, I had never felt "smart enough" to do math. Dr. Gelb changed that. She has been not only the best resource I have had in mathematics but also the first female math professor I have ever had. As an 18-year-old Black woman in STEM, she has made me feel young, Black, and mathematically gifted.

Dr. Anne Gelb's path to Dartmouth and her impact on students like me prove her brilliance and deep care for education. Raised in Laramie, Wyoming, a town between the Snowy Range and the Laramie Mountains, Dr. Gelb developed a love for problem-solving, which eventually led her to UCLA, where she earned her bachelor's degree. She then pursued graduate studies in applied mathematics at Brown University, where she earned her Ph.D. under the mentorship of Professor David Gottlieb. Following a postdoctoral fellowship at Caltech, she spent years as a faculty member at Arizona State University before joining Dartmouth's Department of Mathematics in 2016. She currently holds the prestigious John G. Kemeny Parents Chaired Professorship.

Dr. Gelb is a numerical analyst with a research focus on high-order methods for signal and image restoration, classification, and change detection. Her work spans various fields, from speech recognition and medical imaging to credit card fraud detection and video surveillance. A significant part of her research involves indirect data acquisition, such as magnetic resonance imaging (MRI) and synthetic aperture radar (SAR), where she develops algorithms to preserve critical information for accurate identification. Her current research expands these methods into Bayesian frameworks, helping quantify uncertainties in complex systems. This work has applications in sea ice modeling, an area of particular interest to her, as she leads a Multidisciplinary University Research Initiative (MURI) project sponsored by the Department of Defense. She has served her country through her research contributions to both the Navy and the Air Force, working on projects funded by the Air Force Office of Scientific Research and the Office of Naval Research.

Despite her many accomplishments, including the Alfred P. Sloan Research Fellowship and the Fondation Sciences Mathématiques de Paris Fellowship, Dr. Gelb has remained committed to mentoring students and fostering a supportive learning environment. At Dartmouth, she serves as an advisor to students, particularly those on the basketball team, always willing to listen and offer guidance. She is an understanding teacher who truly cares about her student's success both in and outside the classroom. Her impact on my confidence in

mathematics is immeasurable, and she represents the kind of educator who not only teaches but inspires.

Beyond her academic achievements, Dr. Gelb is a dedicated mother and an avid sports fan. She balances her demanding career with raising two sons and actively supporting their athletic pursuits. This dual role of a renowned researcher and devoted parent further highlights her ability to navigate multiple worlds with grace and determination.

At Dartmouth, she has embraced her role as an educator with the same enthusiasm she brings to research. She understands the challenges that come with learning mathematics, and she actively works to demystify the subject. In her classroom, she fosters an environment where students feel comfortable asking questions, making mistakes, and growing from them. Her approach is significant to students like me, who may not have seen themselves represented in the field before.

Dr. Gelb's journey from Wyoming to the heights of mathematical research demonstrates the power of persistence, curiosity, and mentorship. Her decision to teach at Dartmouth and support students in their academic and research pursuits is admirable, especially considering her many accomplishments. She is shaping the next generation of mathematicians, ensuring that students from all backgrounds feel seen, capable, and empowered.

For me, Dr. Anne Gelb has been more than just a professor she has been proof that I belong in mathematics. Her influence has reshaped my confidence in the subject, reinforcing that I am not just a student of math but an active contributor in its ever-expanding world. And for that, I am forever grateful.

I took the time to review Anne Gelb's website to learn more about her research interests. I did not complete a formal interview, but I spoke to her on many separate occasions.

#### About the Author:

I am a sophomore from Harlem, New York City. I intend to double major in neuroscience and anthropology, although that may change. I plan to continue my exploration of the intersection of math by taking linear algebra, as recommended by Dr. Anne Gelb, where I can explore a major in mathematics or research combining neuroscience and mathematics. In my free time, I enjoy being a part of the Dartmouth Cheer team, the Dartmouth Alliance for Children of Color, and participating in/ helping plan events with OPAL (the Office of Pluralism and Leadership), cooking and hanging out with my sorority sisters. In the future, I plan to pursue a career as a Life Sciences/Healthcare Analyst in consulting while also earning an MBA/MPH through the joint degree program offered by Dartmouth's Tuck School of Business and Geisel School of Medicine.