



AP Calculus: What to Know

Taking calculus in high school may give you an admissions edge, but there are other paths to advanced math.

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For decades, high school students hoping to attend the most selective colleges in the country have received the same recommendation: Take the most rigorous courses possible. And over that time, Advanced Placement calculus courses have become synonymous with the height of academic achievement.

Yet taking calculus in high school often fails to translate into success in college math, educators say. In a 2016 [report](#) on the role of calculus in the transition from high school to college, researchers noted that about 30% of students who passed calculus in high school (whether through the Advanced Placement course or other options, like [dual enrollment](#)) were placed into precalculus, algebra or even a remedial mathematics course in college. And 1 in 3 students who took calculus in high school received a C or lower in college calculus.

A separate [study](#) of more than 6,000 college freshmen found that mastering the prerequisites of calculus (algebra, geometry and trigonometry) was far more important to students' later success in college calculus than having taken a calculus class in high school.

Still, hundreds of thousands of high schoolers take calculus each year – often because they're looking for an edge in college admissions, experts say, and sometimes before they're ready.

If you're considering taking AP Calculus AB or BC in high school, here are some things to keep in mind.

The Growth of Calculus in High School

Advanced Placement Calculus AB was one of the first AP exams introduced, in 1955, part of a broader push to better prepare American students for math- and science-related careers. Mathematicians and scientists use calculus to construct models and make predictions about everything from the growth rate of bacteria to the structural integrity of bridges.

But calculus was still viewed as college-level work in the 1980s, when only about 30,000 public high school students took the course each year. Today, that number is about [800,000](#).

Meanwhile, the [number of students](#) graduating with a bachelor's degree in engineering, the physical sciences, or mathematics has remained relatively constant, says David Bressoud, director of the [Conference Board of the Mathematical Sciences](#) and a professor of mathematics emeritus at [Macalester College](#).

The explosion of calculus in high school, experts say, can be attributed to the assumption by students (and their parents) that to be competitive when applying to college, they have to have the course on their transcript.

A 2022 [report](#) by the nonprofit Just Equations, which works for equity in math education, and the National Association for College Admission Counseling noted that college admission is one of the main drivers of the decision to take calculus in high school. In a [survey](#) of Rutgers University students who took AP Calculus, about 80% of respondents said they took the class because it looks good on a college application.

That belief has created tremendous pressure on teachers and schools “to let students into calculus, to expand sections in high school, and get as many college-bound students in as possible, whether those students are prepared or not,” says Bressoud. It's also raised equity concerns, as Black and Latino students and students from low-income families are less likely to enroll in calculus in high school.

Access to AP Calculus

For many students, taking calculus in high school isn't even an option.

According to the U.S. Department of Education's 2015-16 [Civil Rights Data Collection](#), only 38% of public high schools with high (more than 75%) Black and Latino enrollment offered calculus. White high school students take calculus at over [twice the rate](#) of Black students. There's also an [economic divide](#): While 38% of high school students from the top quartile of socioeconomic status take calculus, only 7% of students from the bottom quartile do so.

Even more concerning, says Just Equations founder and executive director Pamela Burdman, is that at many schools that do offer calculus, “they restrict access to that course, and often at such schools students of color and low-income students are less likely to be on a pathway to calculus,” a path that begins as early as middle school.

There are districts around the country working to implement more equitable structures, says Denise Walston, director of mathematics at the Council of the Great City Schools, an urban education advocacy program that works with 78 of the largest public school districts in the country.

“Too often when you look at your AP courses, there aren't a lot of students who are Black or brown or in poverty,” Walston says. “Several of our districts have highlighted how you cast a wide net, beginning in grade six, so more students will have access to AP calculus.”

For example, in 2019, the [Dallas Independent School District](#) instituted an opt-out policy for honors classes that automatically placed any middle school student who passed the state exams into an honors math course. That has [significantly increased](#) the number of students, including Hispanic, Black and English-language learners, on track to take [Algebra I by 8th grade](#), a prerequisite for more advanced math courses like calculus.

Does AP Calculus Help With College Admissions?

At the North Carolina School of Science and Mathematics, a two-year public high school with [selective admissions](#), the majority of students are preparing for careers in STEM fields. Yet even in this setting, students aren't necessarily taking AP calculus out of a passion for the subject.

"Taking calculus doesn't necessarily match their career goals," says teacher Dan Teague. "Even where I am, there are kids who want to improve their GPA because AP courses have a higher possible GPA contribution." That in turn helps with college admission.

Teague doesn't blame students. "In their mind, they are seniors in high school and their primary goal is to get into college," he says. "From their perspective, it's the perfect reason to be taking calculus because it gives them one of the best chances of succeeding in that endeavor."

Apart from a select number of STEM-focused institutions, like the [California Institute of Technology](#), the [Massachusetts Institute of Technology](#) and [Harvey Mudd College](#), calculus is not a requirement for college.

[Harvard University](#) and the [University of Chicago](#) explicitly state on their admissions websites that calculus is not required for admission, and note that a challenging high school math sequence can include courses like statistics, data science and mathematical modeling. In 2016, the [University of California issued a statement](#) on the role of calculus in their admissions process, declaring that "no single course, including calculus, determines an admissions decision."

Yet the messaging from admissions officers is mixed. According to the Just Equations report, 53% of admissions officers said calculus gives applicants an edge in admissions.

"It's a slight majority," says Burdman. "But even if it's only 53%, if you're a high school counselor, are you going to advise your students to take calculus? There's a good chance that you are."

Alternatives to AP Calculus

None of this is to say that students shouldn't take calculus, which Teague calls "one of the great technological discoveries of mankind."

For students interested in majoring in engineering or pursuing careers in advanced economics, Bressoud says “by all means, if you can take calculus in high school, it will be advantageous.”

But for many students, alternative courses like statistics or linear algebra have far more relevance to future careers than calculus. Already, several states, including [New Jersey](#) and [Ohio](#), are testing out high school data science classes or incorporating them into their K-12 math standards. Many [experts hope](#) that these alternative math pathways will be given equal value as calculus.

It will take some effort to change the entrenched belief that calculus is the pinnacle of rigor. In a survey, Just Equations [found](#) that, when asked which advanced math course carries the most weight for admissions, admissions professionals ranked AP calculus, regular calculus and precalculus all ahead of statistics.

There’s also a concern that if these alternative pathways continue to be seen as easier, they will become the de facto track for students who are already missing out on the option to take calculus.

“What we really need to do is equalize access to calculus such that access isn’t aligned with demographic issues, while also making other courses available,” Burdman says. “The decision of math options can really be driven by student interest and not by a perceived pecking order amongst the courses or implicit bias.”