The Role of Calculus in the Transition from High School to College Mathematics

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Challenges in the transition from high school to postsecondary mathematics, Gail Burrill

The peacock-tail theory of AP® Calculus, Bob Orlin

Calculus: A joint position statement of the Mathematical Association of America and the National Council of Teachers of Mathematics

Background to the MAA/NCTM statement on calculus, David Bressoud, Dane Camp, and Daniel Teague
First College Math Class for those who took Calculus in High School (thousands)

- Calc II or higher: ~150,000
- Calc I, earn A or B: ~150,000
- Calc I, earn C or lower: ~100,000
- Business Calc, Stat, or no math: ~150,000
- Precalc, College Algebra, or lower: ~250,000

These are rough estimates based on a variety of data sources.
For most students, taking calculus in high school serves the same purpose as a peacock growing a tail.
You do it to attract attention.
You do it to impress potential matches.

Check it out, Harvard! If I can grow a tail like this, I can do anything you ask!

You do it, in short, to get into college.
For most students, it's not particularly "useful."

It's just a conspicuous self-advertisement.
For their part, admissions offices don't care about the tails per se. They just appreciate that it takes a well-nourished, go-getter peacock to grow such a big, bold tail. Over time, they've gravitated towards big tails as a signal of strength.
I realize this might sound cynical.
Am I saying that calculus is useless?
That we should ditch it?

Did I take all those derivatives for nothing?
NO!

Eliminate the tails, and the competitive cycle will simply renew itself—perhaps this time with something LESS valuable.
Rather, we should note that the peacock tail—meant as a private signal between male and female—turns out jaw-droppingly beautiful, even to outsiders like us.
Ambitious kids are going to strut and show off for colleges. That's unavoidable. But as long as they do, let's help them grow tails that are gorgeous, colorful, and not too cumbersome.
Let's make sure the tails give them a chance to fly.