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Letters

The cruel world of calculus

"The Troubled State of Calculus" (SN: 4/5/86, p. 220) struck a resonant chord with me, but I don't think it was the one you expected. I did quite well in the first and second semesters of calculus but failed the third — three times! It seemed to me then (and still does now) that something like intuition is required to thread one's way through the maze of transformations and identities and finally arrive at a simplified expression that is workable. At every step one must choose among many possible "pathways," and I hadn't the faintest idea how or why to choose. The point is, it's not just the introductory course that needs some help.

The third time through Advanced Integrals I tried everything, including hypnosis and bribery, to no avail. I shall be bitter about flunking out of graduate school and losing my doctorate until the day I die. Maybe longer.

William H. Beauman
Chicago, Ill.

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chology, geology, sociology, biology, astronomy, architecture, etc.) is exposed to the calculus in both lectures and assignments, and when fluency in mathematics is the expected norm. The atmosphere or "culture" of undergraduate life needs to evolve so that quantitative thought is accepted as commonplace.

William Menke

Assistant Professor of Geophysics
United States Presidential Young Investigator
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Corvallis, Ore.

While lecturing at a prominent Ivy League university, I was once asked to fill in for a calculus professor. After the first lecture, to my surprise, the 300-plus students swarmed around, asking me to take over their course for the duration of the semester. Two days later a petition with more than 250 names was taken by the students to the department chairman

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requesting the same (this wasn't allowed since I didn't have a Ph.D.). From what the students told me, their calculus course would have been just punishment for someone on death row.

What is important in relation to your article is that the students didn't petition for calculators or easier homework assignments. They wanted to learn calculus. That means limits, derivatives, integrals and the elegance of a beautiful mathematical language.

With the mixture of students in today's larger classes, our first consideration must be the future mathematicians, engineers and physicists. Before forcing "new calculus" on unsuspecting students, possibly a strong effort should be made to teach "old calculus" with the excitement that creates a sound and interesting learning experience.

James M. McCanney
Roseville, Minn.

Your article spoke clearly of problems that we at the high school level are hearing more and more about from our former students. Present seniors are assessing college choices with an eye to how and by whom college calculus classes are taught.

Dismayed and a little unbelieving of the reports of class after class taught by uncaring, non-English-speaking instructors, I visited calculus classes at two of the largest institutions in our state — both of which have well-earned reputations in the fields of mathematics, physics, chemistry and engineering. The reports of the death of the effort to make calculus an understandable, exciting course are not exaggerated. Bad teaching was the

standard at both institutions.

As a former teacher of AP calculus, I suggest that college mathematicians, presidents and deans look at some of the outstanding examples of excellent calculus teaching at the high school level.

Marjorie S. Loennig
Director of College Counseling
The Holton-Arms School
Bethesda, Md.

The calculus problem has a ready solution. Reprint some of the popular texts from the early '50s and turn the course over to the physics department. We actually use calculus in our work. We have the applications to real problems to demonstrate that calculus is an indispensable tool for scientists and engineers.

When I took the course, some 30 years ago, it was taught by professors who had solid backgrounds in physics and engineering. We met five hours a week for a year and thoroughly studied a 500-page book.

Today's students are expected to "cover" the material in books that are 800-plus pages long in courses taught by mathematicians with little or no acquaintance with physics or engineering or other practical applications (my students tell me the applications are invariably skipped). These books also contain much material formerly covered in preliminary courses (algebra, trigonometry, analytic geometry). Too much, too fast and all force fed by instructors whose interests lie elsewhere.

R. C. Nicklin
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— from *Kirkus Reviews*

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