

# FOCUS

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## Calculus Redux

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Should calculus be taught differently? Can it? Common wisdom says "no"—which topics are taught, and when, are dictated by the logic of the subject and by client departments. The surprising answer from a four-day Sloan Foundation-sponsored conference on calculus instruction, chaired by Ronald Douglas, SUNY at Stony Brook, is that significant change is possible, desirable, and necessary. Meeting at Tulane University in New Orleans in January, a diverse and sometimes contentious group of twenty-five faculty, university and foundation administrators, and scientists from client departments, put aside their differences to call for a leaner, livelier, more contemporary course, more sharply focused on calculus's central ideas and on its role as the language of science.

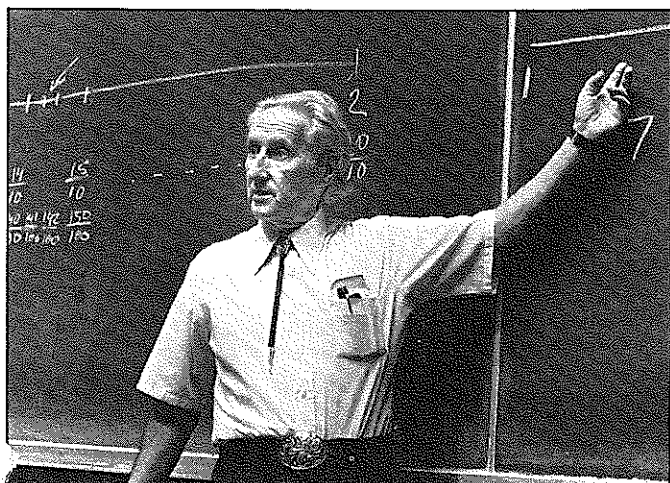
That calculus instruction was found to be ailing came as no surprise. As one conferee put it, "calculus is the course mathematicians love to hate." Too many students seem to agree; at some schools fewer than half of those who enroll pass the course. Those who do pass, and their teachers, may have to cope with poor pre-calculus preparation, inexperienced or discouraged instructors, an over-fat text with syl-

labus to match, little or no feedback on regular assignments, and worst of all, a rich and powerful subject reduced to mechanical drills.

Client department's demands are sometimes blamed for calculus's overcrowded and rigid syllabus. The conference's first surprise was a general agreement that there is room for change. What is needed, for further mathematics as well as for client disciplines, is a deep and sure understanding of the central ideas and uses of calculus. Mac Van Valkenberg, Dean of Engineering at the University of Illinois, James Stevenson, a physicist from Georgia Tech, and Robert van der Vaart, in biomathematics at North Carolina State, all stressed that while their departments want to be consulted, they are less concerned that all the standard topics be covered than that students learn to use concepts to attack problems in a flexible and incisive way.

Will the discrete mathematics of computation render calculus obsolete? Not according to the Tulane conferees. On the contrary, while the computer surely obliges us to rethink what we want from calculus, it also presents new opportunities for applying and understanding calculus ideas, and for extending the reach of applications well beyond the tra-

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Arnold E. Ross, Professor Emeritus at The Ohio State University, was awarded the MAA's highest honor at its Annual Meeting. See page 3 of this issue.

## International Congress of Mathematicians Featured in Center Section

The center section of this issue focuses on the International Congress of Mathematicians (ICM-86) to be held August 3-11, 1986 on the campus of the University of California, Berkeley. Members are urged to take advantage of this unusual opportunity to meet with many of the world's most prominent mathematicians.

## Employment Advertisements

For the second time, FOCUS has included in the center section, employment advertisements. You will find the rates and deadline information on page v.