1067-J1-1139 **Patricia Baggett*** (baggett@nmsu.edu), Dept of Mathematical Sciences, MSC 3MB P.O. Box 30001, New Mexico State University, Las Cruces, NM 88003-8001, and **Andrzej Ehrenfeucht** (andrzej.ehrenfeucht@colorado.edu), Computer Science Department, P.O. Box 430, University of Colorado, Boulder, CO 80309-0430. *Calculus reform: What next?*

The calculus reform movement left three aspects of calculus courses unchanged. (1) In applications students are still given mathematical models of situations. and their work ends when they design appropriate formulas. (2) The main concept is the derivative, and the (Riemann) integral is mainly handled by antiderivatives. (This approach ignores the 20th century work of Lebesgue and Kolmogorov.) (3) The intuitive introduction of derivative and integral is geometric and based on the graph of a function (the derivative is the slope of the tangent line and the integral is the area below the graph). We will describe an experimental calculus course taught three times at New Mexico State University in which: (1) Students derived mathematical models of physical objects, and after deriving appropriate formulas, performed all necessary computations and constructed the objects. (2) The concept of the integral was based on Lebesgue's and not Riemann's definition. (3) The concepts of derivative and integral were introduced (more abstractly) without reference to the graph of a function. We will discuss good and bad aspects of this approach, and its possible use in mainline calculus courses. (Received September 19, 2010)