

1067-T1-2224 **Whitney Johnson***, 2226A Benjamin Building, University of Maryland, College Park, MD
20742, and **Bill Rosenthal**. *Precalculus from an Ontological Perspective*. Preliminary report.

Universities are struggling with the large number of students who place into classes below calculus and perform poorly. We posit that one factor underlying this problem is inattention to ontological issues - in particular, the very existence of the mathematical objects under study. A tacit assumption in most mathematics textbooks is that a clear definition of an object is ontologically sufficient for conceptualizing and operating with that object. We wish to disinter and examine this assumption. It is reasonable to conjecture that, to someone who questions the existence of an object, a definition of utter clarity may not suffice. Definitions address the question, "What is it?" - presupposing that, indeed, it is. Definitions do not address the primal question, "Is it?" Professional mathematicians, who hold the power to create objects of study by sheer will, need not bother with the latter query. Students fresh out of high school are unlikely to be so philosophically fortunate.

Each of us teaches precalculus, one at an urban community college, the other at a research university. As a case in point, we consider the ontological content of precalculus as inferred from textbooks, cross-referencing the findings with insights drawn from studies of our students' work. (Received September 22, 2010)