Conceptions of Continuity: A Look at Advanced Placement Calculus Students

Leah Bridgers
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Advisor: Prof. Helen M. Doerr

Research Apprenticeship Report Abstract

Abstract

This paper reports on the results of a study of high school Advanced Placement calculus students’ conceptions of continuity. The subjects were drawn from two schools, with two sections of calculus students participating in each school. Data collected for this study consisted of a survey given to all students and interviews with four of the students and both teachers. Findings confirmed that students have difficulty distinguishing continuity from the existence of the function and the function being differentiable. Results elaborated on the contextual dependence of reasoning about continuity that suggests a link between the functional representation used and students’ determination of whether a function is continuous. The study also provides some evidence that teachers’ understanding of continuity influences student understanding. Additionally I found, in contrast to other research results, that students were willing to create graphs of functions containing cusp.