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**Geometric and algebraic approaches in the concept of “limit” and the impact of the “didactic contract”.**

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Summary: The present study explores students' abilities in conversions between geometric and algebraic representations, in problem-solving situations involving the concept of “limit” and the interrelation of these abilities with students' constructed understanding of this concept. An attempt is also made to examine the impact of the “didactic contract” on students' performance through the processes they employ in tackling specific tasks on the concept of limit. Data were collected from 222 12th-grade high school students in Greece. The results indicated that students who had constructed a conceptual understanding of limit were the ones most probable to accomplish the conversions of limits from the algebraic to the geometric representations and the reverse. The findings revealed the compartmentalized way of students' thinking in non-routine problems by means of their performance in simpler conversion tasks. Students who did not perform under the conditions of the didactic contract were found to be more consistent in their responses for various conversion tasks and complex problems on limits, compared to students who, as a consequence of the didactic contract, used only algorithmic processes.

*Classification:* I24 C34

*Keywords:* didactic contract; geometric and algebraic representations; the concept of limit; limit of a function; understanding; grade 12; upper secondary; empirical investigations

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