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**An exploration of students' conceptual knowledge built in a first ordinary differential equations course. I.**

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Summary: This study aims to analyze and document the types of knowledge that university students exhibit to deal with fundamental issues that they had studied in a first ordinary differential equation course. Questions that helped us structure the research included: How do students interpret and deal with the concept of solution to an Ordinary Differential Equation (ODE)? To which extent do students use mathematical concepts they have previously studied to answer basic questions related to ODEs? And, to what extent do the students' answers privilege the use of certain type of representation to explore and examine issues related to ODEs? Results indicate that, in general, students choose one of two methods to verify whether a function represents a solution to a given ODE: a substitution method or by solving directly the given equation. It was observed that they do not rely on concepts associated with the meaning of derivative to make sense and deal with situations that involve basic ODEs' ideas; rather, they tend to reduce their knowledge of ODEs to the search for an algorithm (analytical approach) to solve particular groups of equations. In addition, there is evidence that students do not use graphic representations to explore meanings and mathematical relations and they experience difficulties to move back and forth from one type of representation to another.

*Classification:* I75 C35