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What does it mean for a student to understand the first-year calculus? perspectives of 24 experts.

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Summary: This article presents the views of 24 nationally recognized authorities in the field of mathematics, and in particular the calculus, on student understanding of the first-year calculus. A framework emerged that includes four overarching end goals for understanding of the first-year calculus: (a) mastery of the fundamental concepts and-or skills of the first-year calculus, (b) construction of connections and relationships between and among concepts and skills, (c) the ability to use the ideas of the first-year calculus, and (d) a deep sense of the context and purpose of the calculus. Each end goal for student understanding is explored in detail and the potential for using the framework as an organizational tool is discussed. (ERIC)

Classification: C35 D65 D75

Keywords: calculus; understanding; comprehension; mathematical concepts; introductory courses; concept formation; mathematics skills; goals of mathematics education; misconceptions; cognitive difficulties

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