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Title: *Computability, logic, and the Entscheidungsproblem*

Abstract: Centuries ago, Wilhelm Leibniz envisioned a formal system which could determine if any proposition was true or false. In the 20th century, David Hilbert took up this question and named it the *Entscheidungsproblem*, or “decision problem.” Kurt Gödel gave a general answer in the form of the now-famous incompleteness theorem. For the system of arithmetic mathematicians use daily, the answer is no, as proven by Alonzo Church. To do so, he defined the formal system of the lambda calculus, a system of functions of one variable over an infinite set of variables. We will describe the lambda calculus in brief, show some examples, and demonstrate the undecidability of the lambda calculus by way of combinatory logic.