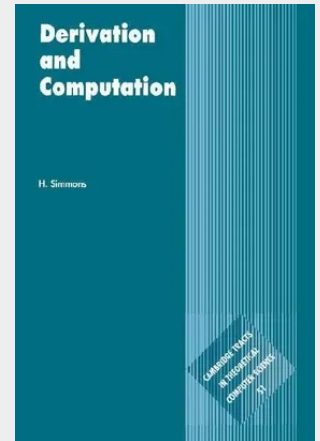


Derivation and Computation

Mathematics is about proofs, that is the derivation of correct statements; and calculations, that is the production of results according to well-defined sets of rules. The two notions are intimately related. Proofs can involve calculations, and the algorithm underlying a calculation should be proved correct. The aim of the author is to explore this relationship. The book itself forms an introduction to simple type theory. Starting from the familiar propositional calculus the author develops the central idea of an applied lambda-calculus. This is illustrated by an account of Gödel's T, a system which codifies number-theoretic function hierarchies. Each of the book's 52 sections ends with a set of exercises, some 200 in total. These are designed to help the reader get to grips with the subject, and develop a further understanding. An appendix contains complete solutions of these exercises.

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