

Martin Goldstern and Haim Judah, *The Incompleteness Phenomenon. A New Course in Mathematical Logic*, Wellesley, Massachusetts, A. K. Peters, 1995, xiii + 247 pp.

Reviewed by

ROMAN MURAWSKI

Wydział Matematyki i Informatyki
Uniwersytet im. Adama Mickiewicza
ul. Matejki 48/49
60-769 Poznań, Poland
E-mail: rmur@math.amu.edu.pl

The book under review is a course in mathematical logic. Divided into four chapters which, in the authors' opinion, can be taught in two semesters, it is based on the second author's lectures in logic given in Berkeley and Bar Ilan. The forward to the book was written by Saharon Shelah, who explains in it that logic is a branch of mathematics dealing with problems of exactness of mathematics itself, of what is a mathematical proof, of what mathematical theories are like, of what does it mean to be computable, of what are the powers of a mathematical theory, etc. He points out that logic is "one of the oldest intellectual disciplines yet also one which has developed enormously in this century" (p. ix).

The main focus of the book is the incompleteness phenomenon discovered by Gödel. It consists of the fact that "axiom systems cannot capture all semantical truths" (p. xi). This is the main result in basic mathematical logic.

The book is divided, as indicated above, into four chapters. The first two chapters provide a basic background in the subject. All details are explained here so that a student not familiar with the abstract method used in mathematical logic can read about it. The chapter "The Framework of Logic" is devoted to induction, propositional calculus, predicate calculus and proof systems. The concept of induction is introduced in a very general way through the notion of an "inductive structure". This notion is essential for