Awodey, Steve

Category theory. (English) Zbl 1100.18001

Oxford Logic Guides 49; Oxford Science Publications. Oxford: Oxford University Press (ISBN 0-19-856861-4/hbk). xi, 256 p. (2006).

Those with an interest in logic, linguistics, cognitive science, mathematics, computer science, philosophy, or a number of other fields, can deepen their appreciation of their subject having a working knowledge of category theory. This book is written for such people when their backgrounds include only a couple of tertiary mathematics or logic courses; say, a discrete mathematics course. Intuitive set theory, including the notion of function, is assumed. Structures such as topological spaces and rings are not avoided; they are there for those who know about them or care to learn elsewhere, but these bits are not essential to the development. The author concentrates more on ordered sets, monoids and groups, and the reader will develop some skill in dealing with those structures, as well as categories, by the end of the book.

The first half of the book gives the definition of category and then discusses concepts that live within one: these include epimorphisms, terminal objects, products, groups, limits, exponentials, and duality. Right in the middle of the book, functors are defined followed by natural transformations in the same chapter.

The second half goes on to deal with presheaf categories, adjoint functors, and monads. Features of the book include glimpses of typed lambda-calculus, elementary toposes, quantifiers as adjoints, and algebras for endofunctors. The author's decade of teaching this material has produced a volume to enlighten the many who are mathematically competent but largely untested. The typeface is pleasant and the length (circa 260 pages) quite reasonable: an attractive text.

Reviewer: Ross H. Street (North Ryde)

MSC:

18-01	Introductory exposition (textbooks, tutorial papers, etc.) pertaining to category theory
03-01	Introductory exposition (textbooks, tutorial papers, etc.) pertaining to mathematical logic and foundations

Cited in **1** Review
Cited in **58** Documents

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