

Categories for the Working Mathematician

Categories for the Working Mathematician (CWM) is a textbook in category theory written by American mathematician Saunders Mac Lane, who cofounded the subject together with Samuel Eilenberg. It was first published in 1971, and is based on his lectures on the subject given at the University of Chicago, the Australian National University, Bowdoin College, and Tulane University. It is widely regarded^{[1][2]} as the premier introduction to the subject.

Contents

The book has twelve chapters, which are:

- Chapter I. Categories, Functors, and Natural Transformations.
- Chapter II. Constructions on Categories.
- Chapter III. Universals and Limits.
- Chapter IV. Adjoints.
- Chapter V. Limits.
- Chapter VI. Monads and Algebras.
- Chapter VII. Monoids.
- Chapter VIII. Abelian Categories.
- Chapter IX. Special Limits.
- Chapter X. Kan Extensions.
- Chapter XI. Symmetry and Braiding in Monoidal Categories
- Chapter XII. Structures in Categories.

Chapters XI and XII were added in the 1998 second edition, the first in view of its importance in string theory and quantum field theory, and the second to address higher-dimensional categories that have come into prominence.^[3]

Although it is the classic reference for category theory, some of the terminology is not standard. In particular, Mac Lane attempted to settle an ambiguity in usage for the terms epimorphism and monomorphism by introducing the terms *epic* and *monic*, but the distinction is not in common use.^[4]

References

- ↑ Mac Lane, Saunders (September 1998). *Categories for the Working Mathematician*. Graduate Texts in Mathematics **5** (Second ed.). Springer ISBN 0-387-98403-8 Zbl 0906.18001.

Notes

- ↑ Leinster, Tom (2014). *Category Theory for the Sciences* Cambridge University Press. p. 174."The towering presence among category theory books is the classic one by one of its founders: Saunders Mac Lane's Categories for the Working Mathematician"
- ↑ Awodey, Steve (2010). *Category Theory*. Oxford University Press. p. iv "Why write a new textbook on Category Theory, when we already have Mac Lane's Categories for the Working Mathematician? Simply put, because Mac Lane's book is for the working (and aspiring) mathematician. What is needed now after 30 years of spreading into

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various other disciplines and places in the curriculum, is a book for everyone else."Wodey also dedicated the book to Saunders Mac Lane.

3. From the preface to the second edition.

4. Bergman, George (1998).*An Invitation to General Algebra and Universal Constructions*Henry Helson. p. 179.

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