Preface

This book is a self-contained introduction to the core of the theory of dynamical systems, with emphasis on the study of maps. This includes topological, low-dimensional, hyperbolic and symbolic dynamics, as well as a brief introduction to ergodic theory. It can be used primarily as a textbook for a one-semester or two-semesters course on dynamical systems at the advanced undergraduate or beginning graduate levels. It can also be used for independent study and as a rigorous starting point for the study of more advanced topics.

The exposition is direct and rigorous. In particular, all the results formulated in the book are proven. We also tried to make each proof as simple as possible. Sometimes, this required a careful preparation or the restriction to appropriate classes of dynamical systems, which is fully justified in a first introduction. The text also includes many examples that illustrate in detail the new concepts and results, as well as 140 exercises, with different levels of difficulty.

The theory of dynamical systems is very broad and is extremely active in terms of research. It also depends substantially on most of the main areas of mathematics. So, in order to give a sufficiently broad view, but still self-contained and with a controlled size, it was necessary to make a selection of the material. In view of the necessary details or the need for results from other areas, some topics have been omitted, most notably Hamiltonian and holomorphic dynamics, although we have indicated references for these and other topics. We have also provided references for further reading on topics that are natural continuations of the material in the book. These suggestions, together with a short description of the contents and of the interdependence of the various chapters, are grouped together in the introduction.

Lisbon, Portugal

Luis Barreira
Claudia Valls

http://www.springer.com/978-1-4471-4834-0

Dynamical Systems
An Introduction
Barreira, L.; Valls, C.
2013, IX, 209 p. 44 illus., Softcover
ISBN: 978-1-4471-4834-0