

Preface

The purpose of this book is to introduce those fields of mathematics that are contributing to other fields and to industry and that have the potential of contributing in the future. The readers targeted by the book are upper-level undergraduate students, graduate students, and corporate individuals. The six people responsible for editing the Basic Volume and Applied Volume of the book and the person in charge of overall editing made up the Editorial Committee, and all members of the Institute of Mathematics for Industry (IMI) and individuals from industry and academia having a deep relationship with IMI made contributions. The members of the Editorial Committee are listed below.

Algebra: Takayuki Ochiai (IMI, Kyushu University)

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Analysis: Shin-ichiro Ei (IMI, Kyushu University, now at Hokkaido University)

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Applied Mathematics: Ryuei Nishii (IMI, Kyushu University)

Application of Mathematics: Kanzo Okada (IMI, Kyushu University)

Overall Editing: Shingo Saito (Faculty of Arts and Science, Kyushu University)

On reading the submitted manuscripts, we could not help but be reminded of the wide dynamic range of mathematics and the great potential for its application to other fields and industry. We feel confident that the goal of publishing this book—to help others become more knowledgeable about the great possibilities of mathematical modeling—will be achieved, and it is our hope that this book and its individual articles will prove useful in a variety of situations and scenarios. Finally, we would like to extend our deep appreciation to those in industry and academia who took time from their busy schedules to prepare manuscripts for this book.

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Ryuei Nishii

A Mathematical Approach to Research Problems of
Science and Technology
Theoretical Basis and Developments in Mathematical
Modeling

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