

PREFACE

Mathematics is an important technique for the solution of problems in almost any area of society today. It has been of crucial importance in the advancement of space travel, telecommunications, computing, power generation and environmental issues. The use of mathematical models to predict whale populations has done much to conserve current stocks whilst the solution of the equations of motion for ballistics has helped design rockets of awesome power which can pinpoint targets. Mathematics in the hands of people and governments can be used for the benefit or destruction of mankind. Whatever view you take, however, its power cannot be ignored.

This particular text aims to develop mathematical topics and concepts, illustrating how the techniques can be used in practical ways. Some mathematical themes are important for their own sake and this is also recognised.

This text includes examples, activities and exercises. It should be noted that the activities are **not** optional but are an important part of the learning philosophy in which you are expected to take a very active part. The text integrates

- **Exposition** in which the concept is explained;
- **Examples** which show how the techniques are used;
- **Activities** which either introduce new concepts or reinforce techniques;
- **Discussion Points** which are essentially 'stop and think' points, where discussion with other students and teachers will be helpful;
- **Exercises** at the end of most sections in order to provide further practice;
- **Miscellaneous Exercises** at the end of most chapters, providing opportunities for reinforcement of the main points of the chapter.

Note that answers to the exercises are given at the back of the book. You are expected to have a calculator available throughout your study of this text and occasionally to have access to a computer.

Some of the sections, exercises and questions are marked with an asterisk (*). This means that they are **not** central to the development of the topics in this text and can be omitted without causing problems.

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Discussion points are written in a special typeface as illustrated here.