# Preface

For 2,500 years the number $\pi$ has occupied a central position in the history of mathematics. It is now coming back very much into vogue through research into increasingly high-power algorithms for the calculation of its decimal places.

It was our intention to write *The number $\pi$* as a university-level textbook, which could also be useful for students of faculties of science, students in preparatory classes and teachers of mathematics. Moreover, by virtue of its encyclopaedic and fundamental nature, the subject could be of interest to any reader who has received an education, however long ago, at this level.

An examination of the table of contents shows that we are dealing with a theme which *cuts across* the mathematics courses classically taught in the first four years of college. Thus it offers the reader the opportunity to learn, review and give long-term thought to the concepts covered in these programmes by following the guiding thread of this favoured number.

The sequence of the first five chapters unrolls in a more or less historical fashion, although we have associated ourselves with the deep mathematical sense rather than with the anecdotal aspect. Consequently, most of the results are proved in the body of the text, except at the end of Chapter 5. Moreover, we include some one-hundred exercises, to be undertaken alongside and in parallel with the reading; their solutions are given together in the final Chapter 6. Thus, we have made the pedagogical decision to follow the chronological order of discoveries about $\pi$ quite closely; this leads to a variable level of reading, of increasing difficulty: one might coarsely say

that, for $n \leq 5$, Chapter $n$ is at the level Baccalaureate $+ n$.[*] Nevertheless, we would warn the reader that the mathematical level rises quite markedly in Chapter 5.

But this book is also intended as a testimony of admiration for the great mathematicians of the past who have poured over this so natural and so mysterious number $\pi$: Archimedes and the mathematicians of ancient Greece; the mathematicians of the Renaissance; Euler and his countless works; Gauss, *princeps mathematicorum*, specialist on cyclotomy and often far ahead of his time; Abel and Jacobi, creators of the foundations of elliptic function theory; Hermite, who provided the inspiration for Lindemann's proof of the transcendency of $\pi$; and Ramanujan, whose unexpected formulae still arouse the interest of specialists today.

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[*]*Editor's note*: We can translate this roughly as Chapter $n$ is at the level of the $n$th year of university, making Chapter 5 at the level of a first year graduate student.