

Preface

“A lot of subjects to study; no spare time for unnecessary themes.” For busy learners, necessity is the mother of motivation. The subject symbolized by

$$i^2 = -1$$

may appear to them as a leisured manipulation in an imaginary world, which is a wasteful misconception. Complex analysis is of practical use in a real world.

This book is devoted to demonstrating the practical utility of complex analysis. Unlike standard mathematical textbooks, theoretical explanations do not come first. Instead, the individual chapters start with motivating problems which help the readers understand the need to learn the relevant topics and the application procedures of such topics to practical engineering problems.

Although the book covers complex analysis, mainly in the context of potential flow problems, the basic concept and application methodologies are general and can be easily extended to other engineering problems, including diffusion, heat conduction, and gravitational and electrostatic fields. Rather than a reference book, this is a book for engineering practitioners.

Looking out over the forest of maples in the sunset, the ninth century poet Tu Mu composed “View from the Cliffs,” which concludes with the following phrase:

The frosted leaves are more brilliant than any flowers of spring

The seemingly impractical mathematics, complex analysis, exhibits its utility as brilliantly as other seemingly practical mathematics.

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