Further Mathematics for the Physical Sciences

Description: Further Mathematics for the Physical Sciences aims to build upon the reader's knowledge of basic mathematical methods, through a gradual progression to more advanced methods and techniques. Carefully structured as a series of self-paced and self-contained chapters, this text covers the essential and most important techniques needed by physical science students. Starting with complex numbers, the text then moves on to cover vector algebra, determinants, matrices, differentiation, integration, differential equations and finally vector calculus, all within an applied environment. The reader is guided through these different techniques with the help of numerous worked examples, applications, problems, figures and summaries. The authors aim to provide high-quality and thoroughly class-tested material to meet the changing needs of science students. Further Mathematics for the Physical Sciences:

* Is a carefully structured text, with self-contained chapters.
* Gradually introduces mathematical techniques within an applied environment.
* Includes many worked examples, applications, problems and summaries in each chapter.

Further Mathematics for the Physical Sciences will be invaluable to all students of physics, chemistry and engineering, needing to develop or refresh their knowledge of basic mathematics. The book's structure will make it equally valuable for course use, home study or distance learning.

Contents:

COMPLEX NUMBERS.

Introducing Complex Numbers.
Polar Representation of Complex Numbers.
Demoivre's Theorem and Complex Algebra.

VECTOR ALGEBRA.

Scalar Products of Vectors.
Vector Products of Vectors.

DETERMINANTS AND MATRICES.

Determinants.
Matrices.

DIFFERENTIATION, EXPANSION AND APPROXIMATION.

Expansions and Approximations.
Taylor Expansions and Polynomial Approximations.
Hyperbolic Functions and Differentiation.

INTEGRATION, SUMMATION AND AVERAGING.

Areas, Volumes and Averages.
Special Integration Techniques.
DIFFERENTIAL EQUATIONS.
Formulating and Classifying Differential Equations.
Solving First–Order Differential Equations.
Solving Second–Order Differential Equations.
Waves and Partial Differential Equations.

VECTOR CALCULUS.
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Integrating Vectors.
Appendix.
Answers and Comments.
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