

1. Record Nr.	UNINA9911006987703321
Autore	Pipes Louis A (Louis Albert), <1910-1971>
Titolo	Applied Mathematics for Engineers and Physicists : Third Edition
Pubbl/distr/stampa	Newburyport, : Dover Publications, 2014
ISBN	1-5231-0674-3 0-486-79499-7
Edizione	[3rd ed.]
Descrizione fisica	1 online resource (1760 p.)
Collana	Dover Books on Mathematics
Altri autori (Persone)	HarvillLawrence R. <1935->
Disciplina	510.24/53 510.2453
Soggetti	Mathematical physics Mechanics, Applied Civil & Environmental Engineering Engineering & Applied Sciences Operations Research
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Cover; Title Page; Copyright Page; Preface to The Dover Edition; Preface; Contents; Chapter 1 The Theory of Complex Variables; 1 Introduction; 2 Functions of a Complex Variable; 3 The Derivative and the Cauchy-Riemann Differential Equations; 4 Line Integrals of Complex Functions; 5 Cauchy's Integral Theorem; 6 Cauchy's Integral Formula; 7 Taylor's Series; 8 Laurent's Series; 9 Residues: Cauchy's Residue Theorem; 10 Singular Points of an Analytic Function; 11 The Point at Infinity; 12 Evaluation of Residues; 13 Liouville's Theorem; 14 Evaluation of Definite Integrals; 15 Jordan's Lemma 16 Bromwich Contour Integrals17 Integrals Involving Multiple-valued Functions (Branch Points); 18 Further Examples of Contour Integrals Around Branch Points; 19 The Use of z and in the Theory of Complex Variables; Problems; References; Chapter 2 Linear Differential Equations; 1 Introduction; 2 The Reduced Equation; the Complementary Function; 3 Properties of the Operator $L_n(D)$; 4 The Method of Partial Fractions; 5 Linear Dependence: Wronskian; 6 The Method of Undetermined Coefficients; 7 The Use of Complex Numbers to Find the Particular Integral

8 Linear Second-order Differential Equations with variable Coefficients; 9 The Method of Frobenius; 10 Variation of Parameters; 11 The Sturm-Liouville Differential Equation; Problems; References; Chapter 3 Linear Algebraic Equations, Determinants, and Matrices; 1 Introduction; 2 Simple Determinants; 3 Fundamental Definitions; 4 Laplace Expansion; 5 Fundamental Properties of Determinants; 6 The Evaluation of Numerical Determinants; 7 Definition of a Matrix; 8 Special Matrices; 9 Equality of Matrices; Addition and Subtraction; 10 Multiplication of Matrices; 11 Matrix Division, the Inverse Matrix; 12 The Reversal Law in Transposed and Reciprocated Products; 13 Properties of Diagonal and Unit Matrices; 14 Matrices Partitioned into Submatrices; 15 Matrices of Special Types; 16 The Solution of Linear Algebraic Equations; 17 The Special Case of n Equations and n Unknowns; 18 Systems of Homogeneous Linear Equations; 19 The Characteristic Matrix and the Characteristic Equation of a Matrix; 20 Eigenvalues and the Reduction of a Matrix to Diagonal Form; 21 The Trace of a Matrix; 22 The Cayley-Hamilton Theorem; 23 The Inversion of Large Matrices; 24 Sylvester's Theorem; 25 Power Series of Matrices; Functions of Matrices; 26 Alternate Method of Evaluating Functions of Matrices; 27 Differentiation and Integration of Matrices; 28 Association of Matrices with Linear Differential Equations; 29 Method of Peano-Baker; 30 Adjoint Method; 31 Existence and Uniqueness of Solutions of Matrix Differential Equations; 32 Linear Equations with Periodic Coefficients; 33 Matrix Solution of the Hill-Meissner Equation; 34 The Use of Matrices to Determine the Roots of Algebraic Equations; Problems; References; Chapter 4 Laplace Transforms; 1 Introduction; 2 The Fourier-Mellin Theorem

Sommario/riassunto

One of the most widely used reference books on applied mathematics for a generation, distributed in multiple languages throughout the world, this text is geared toward use with a one-year advanced course in applied mathematics for engineering students. The treatment assumes a solid background in the theory of complex variables and a familiarity with complex numbers, but it includes a brief review. Chapters are as self-contained as possible, offering instructors flexibility in designing their own courses. The first eight chapters explore the analysis of lumped parameter systems. Succeeding topi