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	Nota di contenuto	AN ENGINEER'S GUIDE TO MATHEMATICA®; Contents; Preface; Table of Engineering Applications; Part I Introduction; 1 Mathematica® Environment and Basic Syntax; 1.1 Introduction; 1.2 Selecting Notebook Characteristics; 1.3 Notebook Cells; 1.4 Delimiters; 1.5 Basic Syntax; 1.5.1 Introduction; 1.5.2 Templates: Greek Symbols and Mathematical Notation; 1.5.3 Variable Names and Global Variables; 1.6 Mathematical Constants; 1.7 Complex Numbers; 1.8 Elementary, Trigonometric, Hyperbolic, and a Few Special Functions; 1.9 Strings; 1.9.1 String Creation: StringJoin[] and ToString[] 1.9.2 Labeled Output: Print[], NumberForm[], EngineeringForm[], and TraditionalForm[]1.10 Conversions, Relational Operators, and Transformation Rule; 1.11 Engineering Units and Unit Conversions: Quantity[] and UnitConvert[]; 1.12 Creation of CDF Documents and Documents in Other Formats; 1.13 Functions Introduced in Chapter; Exercises; 2 List Creation and Manipulation: Vectors and Matrices; 2.1 Introduction; 2.2 Creating Lists and Vectors; 2.2.1 Introduction; 2.2.2 Creating a List with Table[]; 2.2.3 Summing Elements of a List: Total[]; 2.2.4 Selecting Elements of a List 2.2.5 Identifying List Elements Matching a Pattern: Position[]2.3 Creating Matrices; 2.3.1 Introduction; 2.3.2 Matrix Generation Using

	Table[]; 2.3.3 Accessing Elements of Arrays; 2.4 Matrix Operations on Vectors and Arrays; 2.4.1 Introduction; 2.4.2 Matrix Inverse and Determinant: Inverse[] and Det[]; 2.5 Solution of a Linear System of Equations: LinearSolve[]; 2.6 Eigenvalues and Eigenvectors: EigenSystem []; 2.7 Functions Introduced in Chapter 2; References; Exercises; 3 User-Created Functions, Repetitive Operations, and Conditionals; 3.1
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	 4.6 Optimization: Maximize[]/Minimize[]4.7 Differentiation: D[]; 4.8 Integration: Integrate[]; 4.9 Solutions of Ordinary Differential Equations: DSolve[]; 4.10 Solutions of Partial Differential Equations: DSolve[]; 4.11 Laplace Transform: LaplaceTransform[] and InverseLaplaceTransform[]; 4.12 Functions Introduced in Chapter; References; Exercises; 5 Numerical Evaluations of Equations; 5.1 Introduction; 5.2 Numerical Integration: NIntegrate[]; 5.3 Numerical Solutions of Differential Equations: NDSolveValue[] and ParametricNDSolveValue[]; 5.4 Numerical Solutions of Equations: NSolve[] 5.5 Roots of Transcendental Equations: FindRoot[]
Sommario/riassunto	Provides the tools for the reader to generate Mathematica® programs to obtain numerical solutions to a wide range of engineering topics An Engineer's Guide to Mathematica® provides the tools to be able to generate verifiably correct Mathematica® programs that obtain symbolic and numerical solutions to a wide range of engineering topics, and to display the numerical results with annotated graphics and, when appropriate, interactive graphics. The first part of the book introduces the fundamentals of Mathematica's syntax and a subset of commands useful in solving eng