

1. Record Nr.	UNINA9910464840803321
Autore	Greenberg Michael D. <1935->
Titolo	Ordinary differential equations // Michael D. Greenberg
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , 2012 ©2012
ISBN	1-118-24341-2 1-118-24340-4 1-118-24338-2
Descrizione fisica	1 online resource (549 p.)
Disciplina	515/.352
Soggetti	Differential equations Differential equations, Partial Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Cover; Title Page; Copyright; Contents; Preface; 1 First-Order Differential Equations; 1.1 Motivation And Overview; 1.1.1 Introduction; 1.1.2 Modeling; 1.1.3 The order of a differential equation; 1.1.4 Linear and nonlinear equations; 1.1.5 Ourplan; 1.1.6 Direction field; 1.1.7 Computer software; 1.2 Linear First-Order Equations; 1.2.1 The simplest case; 1.2.2 The homogeneous equation; 1.2.3 Solving the full equation by the integrating factor method; 1.2.4 Existence and uniqueness for the linear equation; 1.3 Applications Of Linear First-Order Equations; 1.3.1 Population dynamics exponential model1.3.2 Radioactive decay; carbon dating; 1.3.3 Mixing problems; a one-compartment model; 1.3.4 The phase line, equilibrium points, and stability; 1.3.5 Electrical circuits; 1.4 Nonlinear First-Order Equations That Are Separable; 1.5 Existence And Uniqueness; 1.5.1 An existence and uniqueness theorem; 1.5.2 Illustrating the theorem; 1.5.3 Application to free fall; physical significance of nonuniqueness; 1.6 Applications Of Nonlinear First-Order Equations; 1.6.1 The logistic model of population dynamics; 1.6.2 Stability of equilibrium points and linearized stability analysis 1.7 Exact Equations And Equations That Can Be Made Exact1.7.1 Exact

differential equations; 1.7.2 Making an equation exact; integrating factors; 1.8 Solution By Substitution; 1.8.1 Bernoulli's equation; 1.8.2 Homogeneous equations; 1.9 Numerical Solution By Euler's Method; 1.9.1 Euler's method; 1.9.2 Convergence of Euler's method; 1.9.3 Higher-order methods; Chapter 1 Review; 2 Higher-Order Linear Equations; 2.1 Linear Differential Equations Of Second Order; 2.1.1 Introduction; 2.1.2 Operator notation and linear differential operators; 2.1.3 Superposition principle
2.2 Constant-Coefficient Equations 2.2.1 Constant coefficients; 2.2.2 Seeking a general solution; 2.2.3 Initial value problem; 2.3 Complex Roots; 2.3.1 Complex exponential function; 2.3.2 Complex characteristic roots; 2.4 Linear Independence; Existence, Uniqueness, General Solution; 2.4.1 Linear dependence and linear independence; 2.4.2 Existence, uniqueness, and general solution; 2.4.3 Abel's formula and Wronskian test for linear independence; 2.4.4 Building a solution method on these results; 2.5 Reduction Of Order; 2.5.1 Deriving the formula; 2.5.2 The method rather than the formula
2.5.3 About the method of reduction of order
2.6 Cauchy-Euler Equations; 2.6.1 General solution; 2.6.2 Repeated roots and reduction of order; 2.6.3 Complex roots; 2.7 The General Theory For Higher-Order Equations; 2.7.1 Theorems for nth-order linear equations; 2.7.2 Constant-coefficient equations; 2.7.3 Cauchy-Euler equations; 2.8 Nonhomogeneous Equations; 2.8.1 General solution; 2.8.2 The scaling and superposition of forcing functions; 2.9 Particular Solution By Undetermined Coefficients; 2.9.1 Undetermined coefficients; 2.9.2 A special case; the complex exponential method
2.10 Particular Solution By Variation Of Parameters

Sommario/riassunto

Features a balance between theory, proofs, and examples and provides applications across diverse fields of study Ordinary Differential Equations presents a thorough discussion of first-order differential equations and progresses to equations of higher order. The book transitions smoothly from first-order to higher-order equations, allowing readers to develop a complete understanding of the related theory. Featuring diverse and interesting applications from engineering, bioengineering, ecology, and biology, the book anticipates potential difficulties in understanding the various

2. Record Nr.	UNINA9910145958103321
Autore	Myatt Glenn J. <1969->
Titolo	Making sense of data II [[electronic resource]] : a practical guide to data visualization, advanced data mining methods, and applications / / Glenn J. Myatt, Wayne P. Johnson
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, c2009
ISBN	1-282-03107-4 9786612031076 0-470-41740-4 0-470-41739-0
Edizione	[1st edition]
Descrizione fisica	1 online resource (307 p.)
Altri autori (Persone)	Johnson Wayne P
Disciplina	005.74
Soggetti	Data mining Information visualization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 273-277) and index.
Nota di contenuto	MAKING SENSE OF DATA II; CONTENTS; PREFACE; 1 INTRODUCTION; 1.1 Overview; 1.2 Definition; 1.3 Preparation; 1.3.1 Overview; 1.3.2 Accessing Tabular Data; 1.3.3 Accessing Unstructured Data; 1.3.4 Understanding the Variables and Observations; 1.3.5 Data Cleaning; 1.3.6 Transformation; 1.3.7 Variable Reduction; 1.3.8 Segmentation; 1.3.9 Preparing Data to Apply; 1.4 Analysis; 1.4.1 Data Mining Tasks; 1.4.2 Optimization; 1.4.3 Evaluation; 1.4.4 Model Forensics; 1.5 Deployment; 1.6 Outline of Book; 1.6.1 Overview; 1.6.2 Data Visualization; 1.6.3 Clustering; 1.6.4 Predictive Analytics 1.6.5 Applications 1.6.6 Software; 1.7 Summary; 1.8 Further Reading; 2 DATA VISUALIZATION; 2.1 Overview; 2.2 Visualization Design Principles; 2.2.1 General Principles; 2.2.2 Graphics Design; 2.2.3 Anatomy of a Graph; 2.3 Tables; 2.3.1 Simple Tables; 2.3.2 Summary Tables; 2.3.3 Two-Way Contingency Tables; 2.3.4 Supertables; 2.4 Univariate Data Visualization; 2.4.1 Bar Chart; 2.4.2 Histograms; 2.4.3 Frequency Polygram; 2.4.4 Box Plots; 2.4.5 Dot Plot; 2.4.6 Stem-and-Leaf Plot; 2.4.7 Quantile Plot; 2.4.8 Quantile-Quantile Plot; 2.5 Bivariate Data Visualization; 2.5.1 Scatterplot

2.6 Multivariate Data Visualization
2.6.1 Histogram Matrix; 2.6.2 Scatterplot Matrix; 2.6.3 Multiple Box Plot; 2.6.4 Trellis Plot; 2.7 Visualizing Groups; 2.7.1 Dendrograms; 2.7.2 Decision Trees; 2.7.3 Cluster Image Maps; 2.8 Dynamic Techniques; 2.8.1 Overview; 2.8.2 Data Brushing; 2.8.3 Nearness Selection; 2.8.4 Sorting and Rearranging; 2.8.5 Searching and Filtering; 2.9 Summary; 2.10 Further Reading; 3 CLUSTERING; 3.1 Overview; 3.2 Distance Measures; 3.2.1 Overview; 3.2.2 Numeric Distance Measures; 3.2.3 Binary Distance Measures; 3.2.4 Mixed Variables; 3.2.5 Other Measures
3.3 Agglomerative Hierarchical Clustering
3.3.1 Overview; 3.3.2 Single Linkage; 3.3.3 Complete Linkage; 3.3.4 Average Linkage; 3.3.5 Other Methods; 3.3.6 Selecting Groups; 3.4 Partitioned-Based Clustering; 3.4.1 Overview; 3.4.2 k-Means; 3.4.3 Worked Example; 3.4.4 Miscellaneous Partitioned-Based Clustering; 3.5 Fuzzy Clustering; 3.5.1 Overview; 3.5.2 Fuzzy k-Means; 3.5.3 Worked Examples; 3.6 Summary; 3.7 Further Reading; 4 PREDICTIVE ANALYTICS; 4.1 Overview; 4.1.1 Predictive Modeling; 4.1.2 Testing Model Accuracy; 4.1.3 Evaluating Regression Models' Predictive Accuracy
4.1.4 Evaluating Classification Models' Predictive Accuracy
4.1.5 Evaluating Binary Models' Predictive Accuracy; 4.1.6 ROC Charts; 4.1.7 Lift Chart; 4.2 Principal Component Analysis; 4.2.1 Overview; 4.2.2 Principal Components; 4.2.3 Generating Principal Components; 4.2.4 Interpretation of Principal Components; 4.3 Multiple Linear Regression; 4.3.1 Overview; 4.3.2 Generating Models; 4.3.3 Prediction; 4.3.4 Analysis of Residuals; 4.3.5 Standard Error; 4.3.6 Coefficient of Multiple Determination; 4.3.7 Testing the Model Significance; 4.3.8 Selecting and Transforming Variables
4.4 Discriminant Analysis

Sommario/riassunto

A hands-on guide to making valuable decisions from data using advanced data mining methods and techniques. This second installment in the *Making Sense of Data* series continues to explore a diverse range of commonly used approaches to making and communicating decisions from data. Delving into more technical topics, this book equips readers with advanced data mining methods that are needed to successfully translate raw data into smart decisions across various fields of research including business, engineering, finance, and the social sciences. Following a comprehensive introduction tha
