第一图书网, tushu007.com

<<微分方程>>

图书基本信息

书名：<<微分方程>>

13位ISBN编号：9787562929161

10位ISBN编号：7562929165

出版时间：2009-8

出版时间：武汉理工大学出版社

作者：宋迎清，曹付华，黄新　主编

页数：216

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：http://www.tushu007.com

第一图书网, tushu007.com

<<微分方程>>

内容概要

本书是高等学校本科生“ 微分方程 ”课程双语教学的教材，主要介绍各类微分方程的解法，全书共分6章，主要包括：微分方程模型与基本概念；一阶常微分方程（包括一阶显式常微分方程和一阶隐式常微分方程）的解法；常系数高阶线性微分方程的解法、变系数微分方程的解法以及边值问题和可降阶的高阶微分方程的解法；线性方程组的基本原理、常系数齐次线性方程组的解法、常系数非齐次线性方程组的解法；首次积分；解的定性分析方法和稳定性原理；一阶和二阶偏微分方程的解法。

全书各章均编写了习题（答案附在全书的最后）。

本书除了适合作为高等学校本科生“ 微分方程 ”双语课程教学使用外，也可作为自学读本和研究生参考书。

第一图书网, tushu007.com

<<微分方程>>

书籍目录

CHAPTER 1 INTRODUCTION TO DIFFERENTIAL EQUATIONS 1.1 MODELS ON DIFFERENTIAL EQUATIONS 1.2 BASIC CONCEPTS OF DIFFERENTIAL EQUATIONS 1.2.1 Classifications of Differential Equations 1.2.2 Solution of a Differential Equation 1.2.3 Initial-and Boundary-Value Problems Summary ExerciseCHAPTER 2 FIRST-ORDER ORDINARY DIFFERENTIAL EQUATIONS 2.1 THREE BASIC TYPES OF FIRST-ORDER EXPLICIT EQUATIONS 2.1.1 Equations in Which the Variables Are Separable 2.1.2 First-Order Linear Differential Equations 2.1.3 Exact Differential Equations 2.2 TWO AVAILABLE TACTICS 2.2.1 Finding Integrating Factors 2.2.2 Use of Substitutions 2.3 FUNDAMENTAL THEORY OF INITIAL-VALUE PROBLEM 2.3.1 Geometric Interpretation of Solutions 2.3.2 Existence and Uniqueness of the Solutions 2.3.3 * Properties of the Solution on Initia-Value 2.4 METHODS OF APPROXIMATION 2.4.1 The Pieard Method 2.4.2 The Cauehy-Euler Method 2.4.3 Taylor Series Method 2.5 FIRST-ORDER IMPLICIT EQUATIONS 2.5.1 Special Methods for First-Order hnplicit Equations 2.5.2 * Singular Solutions and Envelopes Summary ExerciseCHAPTER 3 HIGH-ORDER ORDINARY DIFFERENTIAL EQUATIONS 3.1 FUNDAMENTAL THEORIES OF LINEAR EQUATIONS 3.1.1 Preliminary Knowledge for the Linear Equations 3.1.2 Properties of Solutions of the Linear Equations 3.2 LINEAR EQUATIONS WITH CONSTANT COEFFICIENTS 3.2.1 Homogeneous Linear Equations with Constant Coefficients 3.2.2 Solution by Undetermined Coefficients 3.2.3 Solution by Laplace Transform 3.3 LINEAR EQUATIONS WITH VARIABLE COEFFICIENTS 3.3.1 Euler' s Equation 3.3.2 Solution by Liouville' s Formula 3.3.3 Solution by Variation of Parameters 3.4 SOLUTION BY POWER SERIES 3.4.1 Ordinary and Singular Point of the Equation 3.4.2 Solution at an Ordinary Point of the Equation 3.4.3 * Soh:fion at a Regular Singular Point of the Equation 3.5 OTHER PROBLEMS OF nTH-ORDER EQUATIONS 3.5.1 Linear Boundary-Value Problems 3.5.2 Reducible nth-Order Differential Equations Summary ExerciseCHAPTER 4 FIRST-ORDER ORDINARY DIFFERENTIAL SYSTEMS 4.1 FUNDAMENTAL THEORIES OF LINEAR SYSTEMS 4.1.1 Preliminary Knowledge for the Linear Systems 4.1.2 Properties of Solutions of First-Order Linear Systems 4.1.3 Solution Matrix and General Solution Matrix 4.2 HOMOGENEOUS LINEAR SYSTEMS WITH CONSTANT COEFFICIENTS 4.2.1 Solution by Finding a General Solution Matrix 4.2.2 Solution by Finding the Standard Solution Matrix 4.3 NON-HOMOGENEOUS LINEAR SYSTEMS WITH CONSTANT COEFFICIENTS 4.3.1 * Solution by Undetermined Coefficients 4.3.2 * Solution by Variation of Parameters 4.3.3 Solution by Laplace Transform 4.4 THE FIRST INTEGRAL 4.4.1 Basic Concepts and Theories of the First Integral 4.4.2 Solution by Finding the First Integrals Summary ExerciseCHAPTER 5 " QUALITATIVE ANALYSIS AND STABILITY OF SOLUTIONS 5.1 INTRODUCTION TO QUALITATIVE ANALYSIS 5.1.1 Differential Dynamic Systems 5.1.2 Equilibrium Point and Closed Trajectory 5.2 STABILITY OF THE TRIVIAL SOLUTION 5.2.1 Concepts of Stability of the Trivial Solution 5.2.2 The Trivial Solution of the Linear System 5.2.3 Method of Linear Approximation 5.2.4 Liapunov' s Second Method 5.3 LOCAL ANALYSIS OF TWO-DIMENSIONAL AUTONOMOUS SYSTEMS 5.3.1 Classification of the Equilibrium Points 5.3.2 Closed Trajectory and Limit Cycle 5.4 GLOBAL PHASE DIAGRAM OF TWO-DIMENSIONAL AUTONOMOUS SYSTEMS 5.4.1 Infinite Points of the System 5.4.2 Examples for the Global Phase Diagram Summary ExerciseCHAPTER 6 INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS 6.1 FIRST-ORDER PARTIAL DIFFERENTIAL EQUATIONS 6.1.1 Basic Concept and Theory 6.1.2 First-Order Homogeneous Linear PDE 6.1.3 First-Order Quasi-Linear PDE 6.1.4 The Cauchy Problem 6.2 SECOND-ORDER PARTIAL DIFFERENTIAL EQUATIONS 6.2.1 Simplification of Second-Order Quasi-Linear Equations 6.2.2 Second-Order Linear Partial Differential Equations Summary ExerciseKEYS OR HINTS

第一图书网, tushu007.com

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:http://www.tushu007.com