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First-Order Differential Equation; 3.5. Exact Differential Equations; 3.6. Solution of the First ODE by Substitution Method; 3.6.1. Substitution Method; 3.6.2. Reduction to Separation of Variables; 3.7. Applications of the First-Order ODEs; 3.8. Second-Order Homogeneous ODE; 3.8.1. Solving a Linear Homogeneous Second-Order Differential Equation; 3.9. The Second-Order Nonhomogeneous Linear ODE with Constant Coefficients; 3.9.1. Method of Undetermined Coefficients; 3.9.2. Variation of Parameters Method
3.10. Miscellaneous Methods for Solving ODE
3.10.1. Cauchy-Euler Equation; 3.10.2. Elimination Method to Solve Differential Equations; 3.10.3. Application of Laplace Transform to Solve ODE; 3.10.4. Solution of Linear ODE Using Power Series; 3.11. Applications of the Second-Order ODE; 3.11.1. Spring-Mass System: Free Undamped Motion; 3.11.2. Damped-Free Vibration; 3.12. Introduction to PDE: Basic Concepts; 3.12.1. First-Order Partial Differential Equations; 3.12.2. Second-Order Partial Differential Equations; Exercises; CHAPTER FOUR: Difference Equations; 4.1. Basic Terms
4.2. Linear Homogeneous Difference Equations with Constant Coefficients
4.3. Linear Nonhomogeneous Difference Equations with Constant Coefficients; 4.3.1. Characteristic Equation Method; 4.3.2. Recursive Method; 4.4. System of Linear Difference Equations; 4.4.1. Generating Functions Method; 4.5. Differential-Difference Equations; 4.6. Nonlinear Difference Equations; Exercises; CHAPTER FIVE: Queueing Theory; 5.1. Introduction; 5.2. Markov Chain and Markov Process; 5.3. Birth and Death (B-D) Process; 5.4. Introduction to Queueing Theory; 5.5. Single-Server Markovian Queue, M/M/1
5.5.1. Transient Queue Length Distribution for M/M/1

Sommario/riassunto

"This book features a collection of topics that are used in stochastic processes and, particularly, in queueing theory. Differential equations, difference equations, and Markovian queues (as they relate to systems of linear differential difference equations) are presented, and the relationship between the methods and applications are thoroughly addressed"--
