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2.6.2. Multidimensional Ito and diffusion processes; 2.6.3. Properties of multidimensional diffusion processes
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3.2.2. Separation of variables in the rectangular Cartesian coordinates3.2.3. Orthogonality of functions; 3.2.4. Fourier series; 3.2.5. Sturm-Liouville problem; 3.2.6. One-dimensional homogeneous problem in a finite medium; 3.3. Solution by the method of Laplace transform; 3.3.1. Definition of the Laplace transform; 3.3.2. Properties of the Laplace transform; 3.4. Green's functions; 3.4.1. Green's function as auxiliary problem to solve diffusive problems; 3.4.2. Analysis for determination of Green's function; Chapter 4. Problems in Finance; 4.1. Basic stochastic models for stock prices
4.1.1. The Black, Scholes and Samuelson model4.1.2. BSS model with deterministic variation of and s; 4.2. The bond investments; 4.2.1. Introduction; 4.2.2. Yield curve; 4.2.3. Yield to maturity for a financial investment and for a bond; 4.3. Dynamic deterministic continuous time model for instantaneous interest rate; 4.3.1. Instantaneous interest rate; 4.3.2. Particular cases; 4.3.3. Yield curve associated with instantaneous interest rate; 4.3.4. Examples of theoretical models; 4.4. Stochastic continuous time dynamic model for instantaneous interest rate; 4.4.1. The OUV stochastic model
4.4.2. The CIR model (1985)

Sommario/riassunto

The aim of this book is to promote interaction between engineering, finance and insurance, as these three domains have many models and methods of solution in common for solving real-life problems. The authors point out the strict inter-relations that exist among the diffusion models used in engineering, finance and insurance. In each of the three fields, the basic diffusion models are presented and their strong similarities are discussed. Analytical, numerical and Monte Carlo simulation methods are explained with a view to applying them to obtain the solutions to the different problems pres