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ΕΙΣΑΓΩΓΗ ΣΤΟΝ ΣΤΟΧΑΣΤΙΚΟ ΛΟΓΙΣΜΟ

$$u(x) := \mathbf{E}_x \{f(B_\tau)\}$$

$$\Delta u(x) = 0$$

B_τ

x

Abstract

The book is intended for advanced undergaduate students in Mathematics departments and covers the following material. a) Conditional expectation, martingales in discrete time (basic properties and applications). b) Brownian motion: Construction, simple properties, strong Markov property, analytical properties, Brownian martingales. c) Construction of the Itô integral and Itô's formula. d) Stochastic differential equations. e) Elements of Financial Mathematics, Pricing of European derivatives, Black-Scholes equation.