Review, Stochastic Calculus

June 7, 2013

Please go through follows sections of the textbook carefully and work out the corresponding exercises.

- CH1 General Probability Theory
  - Sections 1.2, 1.3, 1.6
  - Key Concepts: Probaility Space, Probability Measure, Random Variable, Distributions (CDFs and PDFs), Expectations
  - Exercises 1.4, 1.5, 1.8, 1.13
- CH2 Information and Conditioning
  - Sections 2.1, 2.2, 2.3
  - Key Concepts: Filtrations, Independence, Conditional Expectations
  - Exercises 2.4, 2.5, 2.7
- CH3 Brownian Motion
  - Sections 3.2, 3.3, 3.4, 3.5
  - Key Concepts: Symmetric Random Walk, Brownian Motion (as Martingale), Quadratic Variations, Geometric Brownian Motion
  - All exercises have been discussed previously in the TA section.
- CH4 Stochastic Calculus
  - Sections 4.4, 4.5
  - Key Concepts: Itô-Doeblin Formula, Black-Scholes-Merton Equation, Call-Put Parity, Lévy's Theorem
  - Exercises 4.2, 4.5, 4.8, 4.9, 4.10, 4.12, 4.13, 4.14, 4.18
- CH5 Risk-Neutral Pricing
  - Sections 5.2, 5.3, 5.4
  - Girsanov's Theorem, Martingale Representation Theorem, Arbitrage, Risk-Neutral Pricing Formula
  - Exercises 5.1, 5.2, 5.3, 5.4, 5.7, 5.11, 5.14