

Financial Mathematics For Actuaries Chapter 10

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An Introduction to the Mathematics of Finance - John J. McCutcheon 1989-01-01

There is a concise but thorough treatment of the basic compound interest functions, nominal rate of interest, and the yield (or internal rate of return) and there are many examples on discounted cash flow. Also discussed are applications of the theory to capital redemption policies (with allowance for income tax, capital gains tax and index-linking), and consumer credit calculations. The final chapter provides a simple introduction to stochastic interest rate models.

Mathematical and Statistical Methods for Actuarial Sciences and Finance - Marco Corazza 2018-07-17

The interaction between mathematicians, statisticians and econometricians working in actuarial sciences and finance is producing numerous meaningful scientific results. This volume introduces new ideas, in the form of four-page papers, presented at the international conference Mathematical and Statistical Methods for Actuarial Sciences and Finance (MAF), held at Universidad Carlos III de Madrid (Spain), 4th-6th April 2018. The book covers a wide variety of subjects in actuarial science and financial fields, all discussed in the context of the cooperation between the three quantitative approaches. The topics include: actuarial models; analysis of high frequency financial data; behavioural finance; carbon and green finance; credit risk methods and models; dynamic optimization in finance; financial econometrics; forecasting of dynamical actuarial and financial phenomena; fund performance evaluation; insurance portfolio risk analysis; interest rate models; longevity risk; machine learning and soft-computing in finance; management in insurance business; models and methods for financial time series analysis, models for financial derivatives; multivariate techniques for financial markets analysis; optimization in insurance; pricing; probability in actuarial sciences, insurance and finance; real world finance; risk management; solvency analysis; sovereign risk; static and dynamic portfolio selection and management; trading systems. This book is a valuable resource for academics, PhD students, practitioners, professionals and researchers, and is also of interest to other readers with quantitative background knowledge.

Pension Mathematics with Numerical Illustrations - Howard E. Winklevoss 1993-03-29

From the Pension Research Council of the Wharton School

Actuarial Mathematics: Chapters 3-10 - Newton L. Bowers 1984

Actuaries' Survival Guide - Fred Szabo 2012-05-21

What would you like to do with your life? What career would allow you to fulfill your dreams of success? If you like mathematics and the prospect of a highly mobile, international profession consider becoming an actuary. Szabo's Actuaries' Survival Guide, Second Edition explains what actuaries are, what they do, and where they do it. It describes exciting combinations of ideas, techniques, and skills involved in the day-to-day work of actuaries. This second edition has been updated to reflect the rise of social networking and the internet, the progress toward a global knowledge-based economy, and the global expansion of the actuarial field that has occurred since the first edition. Includes details on the new structures of the Society of Actuaries' (SOA) and Casualty Actuarial Society (CAS) examinations, as well as sample questions and answers. Presents an overview of career options, includes profiles of companies & agencies that employ actuaries. Provides a link between theory and practice and helps readers understand the blend of qualitative and quantitative skills and knowledge required to succeed in actuarial exams. Includes insights

provided by over 50 actuaries and actuarial students about the actuarial profession. Author Fred Szabo has directed the Actuarial Co-op Program at Concordia for over fifteen years.

Introductory Stochastic Analysis for Finance and Insurance - X. Sheldon Lin 2006-04-21

Incorporates the many tools needed for modeling and pricing in finance and insurance. Introductory Stochastic Analysis for Finance and Insurance introduces readers to the topics needed to master and use basic stochastic analysis techniques for mathematical finance. The author presents the theories of stochastic processes and stochastic calculus and provides the necessary tools for modeling and pricing in finance and insurance. Practical in focus, the book's emphasis is on application, intuition, and computation, rather than theory. Consequently, the text is of interest to graduate students, researchers, and practitioners interested in these areas. While the text is self-contained, an introductory course in probability theory is beneficial to prospective readers. This book evolved from the author's experience as an instructor and has been thoroughly classroom-tested. Following an introduction, the author sets forth the fundamental information and tools needed by researchers and practitioners working in the financial and insurance industries: * Overview of Probability Theory * Discrete-Time stochastic processes * Continuous-time stochastic processes * Stochastic calculus: basic topics. The final two chapters, Stochastic Calculus: Advanced Topics and Applications in Insurance, are devoted to more advanced topics. Readers learn the Feynman-Kac formula, the Girsanov's theorem, and complex barrier hitting times distributions. Finally, readers discover how stochastic analysis and principles are applied in practice through two insurance examples: valuation of equity-linked annuities under a stochastic interest rate environment and calculation of reserves for universal life insurance. Throughout the text, figures and tables are used to help simplify complex theory and processes. An extensive bibliography opens up additional avenues of research to specialized topics. Ideal for upper-level undergraduate and graduate students, this text is recommended for one-semester courses in stochastic finance and calculus. It is also recommended as a study guide for professionals taking Causality Actuarial Society (CAS) and Society of Actuaries (SOA) actuarial examinations.

Actuarial Finance - Mathieu Boudreault 2019-03-22

A new textbook offering a comprehensive introduction to models and techniques for the emerging field of actuarial finance. Drs. Boudreault and Renaud answer the need for a clear, application-oriented guide to the growing field of actuarial finance with this volume, which focuses on the mathematical models and techniques used in actuarial finance for the pricing and hedging of actuarial liabilities exposed to financial markets and other contingencies. With roots in modern financial mathematics, actuarial finance presents unique challenges due to the long-term nature of insurance liabilities, the presence of mortality or other contingencies and the structure and regulations of the insurance and pension markets. Motivated, designed and written for and by actuaries, this book puts actuarial applications at the forefront in addition to balancing mathematics and finance at an adequate level to actuarial undergraduates. While the classical theory of financial mathematics is discussed, the authors provide a thorough grounding in such crucial topics as recognizing embedded options in actuarial liabilities, adequately quantifying and pricing liabilities, and using derivatives and other assets to manage actuarial and financial risks. Actuarial applications are emphasized and illustrated with about 300 examples and 200 exercises. The book also comprises end-of-chapter point-form summaries to help the reader review the most important concepts.

Additional topics and features include: Compares pricing in insurance and financial markets Discusses event-triggered derivatives such as weather, catastrophe and longevity derivatives and how they can be used for risk management; Introduces equity-linked insurance and annuities (EIAs, VAs), relates them to common derivatives and how to manage mortality for these products Introduces pricing and replication in incomplete markets and analyze the impact of market incompleteness on insurance and risk management; Presents immunization techniques alongside Greeks-based hedging; Covers in detail how to delta-gamma/rho/vega hedge a liability and how to rebalance periodically a hedging portfolio. This text will prove itself a firm foundation for undergraduate courses in financial mathematics or economics, actuarial mathematics or derivative markets. It is also highly applicable to current and future actuaries preparing for the exams or actuary professionals looking for a valuable addition to their reference shelf. As of 2019, the book covers significant parts of the Society of Actuaries' Exams FM, IFM and QFI Core, and the Casualty Actuarial Society's Exams 2 and 3F. It is assumed the reader has basic skills in calculus (differentiation and integration of functions), probability (at the level of the Society of Actuaries' Exam P), interest theory (time value of money) and, ideally, a basic understanding of elementary stochastic processes such as random walks.

Mathematics of Investment and Credit - Samuel A. Broverman 2010

This book has been named as a reference for the Society of Actuaries Exam FM and the Casualty Actuarial Society Exam 2. It is also listed in the Course of Reading for the EA-1 examination of the Joint Board for the Enrollment of Actuaries. Mathematics of Investment and Credit is a leading textbook covering the topic of interest theory. It is the required or recommended text in many college and university courses on this topic, as well as for Exam FM/2. This text provides a thorough treatment of the theory of interest, and its application to a wide variety of financial instruments. It emphasizes a direct-calculation approach to reaching numerical results, and uses a gentle, thorough pedagogic style. This text includes detailed treatments of the term structure of interest rates, forward contracts of various types, interest rate swaps and financial options and option strategies. Key formulas and definitions are highlighted. Real world current events are included to demonstrate key concepts. The text contains a large number of worked examples and end-of-chapter exercises. The Fifth Edition includes expanded coverage of forwards, futures, swaps and options in order to address the Learning Objectives for the financial mathematics component of Exam FM/2.

Solutions Manual for Mathematics of Investment and Credit - Samuel A. Broverman 1992

Market-Consistent Actuarial Valuation - Mario V. Wüthrich 2010-09-02

It is a challenging task to read the balance sheet of an insurance company. This derives from the fact that different positions are often measured by different yardsticks. Assets, for example, are mostly valued at market prices whereas liabilities are often measured by established actuarial methods. However, there is a general agreement that the balance sheet of an insurance company should be measured in a consistent way. Market-Consistent Actuarial Valuation presents powerful methods to measure liabilities and assets in a consistent way. The mathematical framework that leads to market-consistent values for insurance liabilities is explained in detail by the authors. Topics covered are stochastic discounting with deflators, valuation portfolio in life and non-life insurance, probability distortions, asset and liability management, financial risks, insurance technical risks, and solvency.

Modern Actuarial Theory and Practice - Philip Booth 2020-12-16

In the years since the publication of the best-selling first edition, the incorporation of ideas and theories from the rapidly growing field of financial economics has precipitated considerable development of thinking in the actuarial profession. Modern Actuarial Theory and Practice, Second Edition integrates those changes and presents an up-to-date, comprehensive overview of UK and international actuarial theory, practice and modeling. It describes all of the traditional areas of actuarial activity, but in a manner that highlights the fundamental principles of actuarial theory and practice as well as their economic, financial, and statistical foundations.

Financial Mathematics For Actuaries (Third Edition) - Wai-sum Chan 2021-09-14

This book provides a thorough understanding of the fundamental concepts of financial mathematics

essential for the evaluation of any financial product and instrument. Mastering concepts of present and future values of streams of cash flows under different interest rate environments is core for actuaries and financial economists. This book covers the body of knowledge required by the Society of Actuaries (SOA) for its Financial Mathematics (FM) Exam. The third edition includes major changes such as an addition of an 'R Laboratory' section in each chapter, except for Chapter 9. These sections provide R codes to do various computations, which will facilitate students to apply conceptual knowledge. Additionally, key definitions have been revised and the theme structure has been altered. Students studying undergraduate courses on financial mathematics for actuaries will find this book useful. This book offers numerous examples and exercises, some of which are adapted from previous SOA FM Exams. It is also useful for students preparing for the actuarial professional exams through self-study.

Pension Mathematics for Actuaries - Arthur W. Anderson 2006

Financial Mathematics For Actuarial Science - Richard James Wilders 2020-01-24

Financial Mathematics for Actuarial Science: The Theory of Interest is concerned with the measurement of interest and the various ways interest affects what is often called the time value of money (TVM). Interest is most simply defined as the compensation that a borrower pays to a lender for the use of capital. The goal of this book is to provide the mathematical understandings of interest and the time value of money needed to succeed on the actuarial examination covering interest theory Key Features Helps prepare students for the SOA Financial Mathematics Exam Provides mathematical understanding of interest and the time value of money needed to succeed in the actuarial examination covering interest theory Contains many worked examples, exercises and solutions for practice Provides training in the use of calculators for solving problems A complete solutions manual is available to faculty adopters online

Nonlife Actuarial Models - Yiu-Kuen Tse 2009-09-17

This class-tested undergraduate textbook covers the entire syllabus for Exam C of the Society of Actuaries (SOA).

Mathematical Interest Theory: Third Edition - Leslie Jane Federer Vaaler 2021-04-15

Mathematical Interest Theory provides an introduction to how investments grow over time. This is done in a mathematically precise manner. The emphasis is on practical applications that give the reader a concrete understanding of why the various relationships should be true. Among the modern financial topics introduced are: arbitrage, options, futures, and swaps. Mathematical Interest Theory is written for anyone who has a strong high-school algebra background and is interested in being an informed borrower or investor. The book is suitable for a mid-level or upper-level undergraduate course or a beginning graduate course. The content of the book, along with an understanding of probability, will provide a solid foundation for readers embarking on actuarial careers. The text has been suggested by the Society of Actuaries for people preparing for the Financial Mathematics exam. To that end, Mathematical Interest Theory includes more than 260 carefully worked examples. There are over 475 problems, and numerical answers are included in an appendix. A companion student solution manual has detailed solutions to the odd-numbered problems. Most of the examples involve computation, and detailed instruction is provided on how to use the Texas Instruments BA II Plus and BA II Plus Professional calculators to efficiently solve the problems. This Third Edition updates the previous edition to cover the material in the SOA study notes FM-24-17, FM-25-17, and FM-26-17.

Regression Modeling with Actuarial and Financial Applications - Edward W. Frees 2010

This book teaches multiple regression and time series and how to use these to analyze real data in risk management and finance.

Actuarial Mathematics for Life Contingent Risks - David C. M. Dickson 2009-09-24

How can actuaries best equip themselves for the products and risk structures of the future? Using the powerful framework of multiple state models, three leaders in actuarial science give a modern perspective on life contingencies, and develop and demonstrate a theory that can be adapted to changing products and technologies. The book begins traditionally, covering actuarial models and theory, and emphasizing practical applications using computational techniques. The authors then develop a more contemporary outlook, introducing multiple state models, emerging cash flows and embedded options. Using spreadsheet-

style software, the book presents large-scale, realistic examples. Over 150 exercises and solutions teach skills in simulation and projection through computational practice. Balancing rigour with intuition, and emphasising applications, this text is ideal for university courses, but also for individuals preparing for professional actuarial exams and qualified actuaries wishing to freshen up their skills.

A Benchmark Approach to Quantitative Finance - Eckhard Platen 2006-10-28

A framework for financial market modeling, the benchmark approach extends beyond standard risk neutral pricing theory. It permits a unified treatment of portfolio optimization, derivative pricing, integrated risk management and insurance risk modeling. This book presents the necessary mathematical tools, followed by a thorough introduction to financial modeling under the benchmark approach, explaining various quantitative methods for the fair pricing and hedging of derivatives.

Actuarial Mathematics - Newton L. Bowers 1986

A Spiral Approach to Financial Mathematics - Nathan Tintle 2018-06-15

A Spiral Approach to Financial Mathematics lays a foundation of intuitive analysis of financial concepts early in the course, followed by a more detailed and nuanced treatment in later chapters. It introduces major financial concepts through real situations, integrates active learning, student focused explorations and examples with Excel spreadsheets and straightforward financial calculations. It is organized so sections can be read independently or through in-class guided-discovery activities and/or interactive lectures.

Focusing on conceptual understanding to maximize comprehension and retention, using modern financial analysis tools and utilizing active learning, the book offers a modern approach that eliminates tedious and time-consuming calculations initially without underestimating the ability of readers. Covers FM Exam topics Includes Excel spreadsheets that enable the execution of financial transactions Presents a spiral, active learning pedagogical strategy that accentuates key concepts and reinforces intuitive learning
Backward Stochastic Differential Equations with Jumps and Their Actuarial and Financial Applications - Łukasz Delong 2013-06-12

Backward stochastic differential equations with jumps can be used to solve problems in both finance and insurance. Part I of this book presents the theory of BSDEs with Lipschitz generators driven by a Brownian motion and a compensated random measure, with an emphasis on those generated by step processes and Lévy processes. It discusses key results and techniques (including numerical algorithms) for BSDEs with jumps and studies filtration-consistent nonlinear expectations and g-expectations. Part I also focuses on the mathematical tools and proofs which are crucial for understanding the theory. Part II investigates actuarial and financial applications of BSDEs with jumps. It considers a general financial and insurance model and deals with pricing and hedging of insurance equity-linked claims and asset-liability management problems. It additionally investigates perfect hedging, superhedging, quadratic optimization, utility maximization, indifference pricing, ambiguity risk minimization, no-good-deal pricing and dynamic risk measures. Part III presents some other useful classes of BSDEs and their applications. This book will make BSDEs more accessible to those who are interested in applying these equations to actuarial and financial problems. It will be beneficial to students and researchers in mathematical finance, risk measures, portfolio optimization as well as actuarial practitioners.

Fresh Perspectives: Business management: UJ Custom Publication - 2008

Fundamentals of Actuarial Mathematics - S. David Promislow 2011-01-06

This book provides a comprehensive introduction to actuarial mathematics, covering both deterministic and stochastic models of life contingencies, as well as more advanced topics such as risk theory, credibility theory and multi-state models. This new edition includes additional material on credibility theory, continuous time multi-state models, more complex types of contingent insurances, flexible contracts such as universal life, the risk measures VaR and TVaR. Key Features: Covers much of the syllabus material on the modeling examinations of the Society of Actuaries, Canadian Institute of Actuaries and the Casualty Actuarial Society. (SOA-CIA exams MLC and C, CSA exams 3L and 4.) Extensively revised and updated with new material. Orders the topics specifically to facilitate learning. Provides a streamlined approach to actuarial notation. Employs modern computational methods. Contains a variety of exercises, both

computational and theoretical, together with answers, enabling use for self-study. An ideal text for students planning for a professional career as actuaries, providing a solid preparation for the modeling examinations of the major North American actuarial associations. Furthermore, this book is highly suitable reference for those wanting a sound introduction to the subject, and for those working in insurance, annuities and pensions.

Precalculus - Karla Neal 2012-01-20

PRECALCULUS prepares students for calculus and the rigors of that course, having been written by teachers who have taught the courses and seen where students need help--and where other texts have come up short. The text features precise definitions and exposition, carefully crafted pedagogy, and a strong emphasis on algebraic, transcendental, and trigonometric functions. To show students how important and relevant precalculus topics are to their future coursework, an optional Looking Ahead to Calculus feature appears in each chapter. The varied examples and exercises include many that encourage students to use and understand graphs, as opposed to simply draw them, providing additional sound preparation for calculus. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Actuaries' Survival Guide - Fred Szabo 2012-06-25

What would you like to do with your life? What career would allow you to fulfill your dreams of success? If you like mathematics—and the prospect of a highly mobile, international profession—consider becoming an actuary. Szabo's *Actuaries' Survival Guide*, Second Edition explains what actuaries are, what they do, and where they do it. It describes exciting combinations of ideas, techniques, and skills involved in the day-to-day work of actuaries. This second edition has been updated to reflect the rise of social networking and the internet, the progress toward a global knowledge-based economy, and the global expansion of the actuarial field that has occurred since the first edition. Includes details on the new structures of the Society of Actuaries' (SOA) and Casualty Actuarial Society (CAS) examinations, as well as sample questions and answers Presents an overview of career options, includes profiles of companies & agencies that employ actuaries. Provides a link between theory and practice and helps readers understand the blend of qualitative and quantitative skills and knowledge required to succeed in actuarial exams Includes insights provided by over 50 actuaries and actuarial students about the actuarial profession Author Fred Szabo has directed the Actuarial Co-op Program at Concordia for over fifteen years

Probability for Risk Management - Matthew J. Hassett 2006

An Introduction to the Mathematics of Finance - Stephen Garrett 2013-05-28

An Introduction to the Mathematics of Finance: A Deterministic Approach, 2e, offers a highly illustrated introduction to mathematical finance, with a special emphasis on interest rates. This revision of the McCutcheon-Scott classic follows the core subjects covered by the first professional exam required of UK actuaries, the CT1 exam. It realigns the table of contents with the CT1 exam and includes sample questions from past exams of both The Actuarial Profession and the CFA Institute. With a wealth of solved problems and interesting applications, An Introduction to the Mathematics of Finance stands alone in its ability to address the needs of its primary target audience, the actuarial student. Closely follows the syllabus for the CT1 exam of The Institute and Faculty of Actuaries Features new content and more examples Online supplements available: <http://booksite.elsevier.com/9780080982403/> Includes past exam questions from The Institute and Faculty of Actuaries and the CFA Institute

Introduction to Actuarial and Financial Mathematical Methods - Stephen Garrett 2015-05-02

This self-contained module for independent study covers the subjects most often needed by non-mathematics graduates, such as fundamental calculus, linear algebra, probability, and basic numerical methods. The easily-understandable text of Introduction to Actuarial and Financial Mathematical Methods features examples, motivations, and lots of practice from a large number of end-of-chapter questions. For readers with diverse backgrounds entering programs of the Institute and Faculty of Actuaries, the Society of Actuaries, and the CFA Institute, Introduction to Actuarial and Financial Mathematical Methods can provide a consistency of mathematical knowledge from the outset. Presents a self-study mathematics refresher course for the first two years of an actuarial program Features examples, motivations, and practice

problems from a large number of end-of-chapter questions designed to promote independent thinking and the application of mathematical ideas Practitioner friendly rather than academic Ideal for self-study and as a reference source for readers with diverse backgrounds entering programs of the Institute and Faculty of Actuaries, the Society of Actuaries, and the CFA Institute

Mathematics of Investment and Credit, 6th Edition, 2015 - Samuel A. Broverman 2015-08-27

Mathematics of Investment and Credit is a leading textbook covering the topic of interest theory. It is the required or recommended text in many college and university courses on this topic, as well as for Exam FM. This text provides a thorough treatment of the theory of interest, and its application to a wide variety of financial instruments. It emphasizes a direct-calculation approach to reaching numerical results, and uses a gentle, thorough pedagogic style. This text includes detailed treatments of the term structure of interest rates, forward contracts of various types, interest rate swaps, financial options, and option strategies. Key formulas and definitions are highlighted. Real world current events are included to demonstrate key concepts. The text contains a large number of worked examples and end-of-chapter exercises. The New Sixth Edition includes updates driven by the upcoming changes for the learning objectives for Exam FM, updated examples and exercises and some exposition improvements. The topic of duration has been revamped in Chapter 7 and expanded treatment of determinants of interest rates in Chapter 8.

Derivative Pricing - Ambrose Lo 2018-07-04

The proliferation of financial derivatives over the past decades, options in particular, has underscored the increasing importance of derivative pricing literacy among students, researchers, and practitioners. Derivative Pricing: A Problem-Based Primer demystifies the essential derivative pricing theory by adopting a mathematically rigorous yet widely accessible pedagogical approach that will appeal to a wide variety of audience. Abandoning the traditional "black-box" approach or theorists' "pedantic" approach, this textbook provides readers with a solid understanding of the fundamental mechanism of derivative pricing methodologies and their underlying theory through a diversity of illustrative examples. The abundance of exercises and problems makes the book well-suited as a text for advanced undergraduates, beginning graduates as well as a reference for professionals and researchers who need a thorough understanding of not only "how," but also "why" derivative pricing works. It is especially ideal for students who need to prepare for the derivatives portion of the Society of Actuaries Investment and Financial Markets Exam. Features Lucid explanations of the theory and assumptions behind various derivative pricing models. Emphasis on intuitions, mnemonics as well as common fallacies. Interspersed with illustrative examples and end-of-chapter problems that aid a deep understanding of concepts in derivative pricing. Mathematical derivations, while not eschewed, are made maximally accessible. A solutions manual is available for qualified instructors. The Author Ambrose Lo is currently Assistant Professor of Actuarial Science at the Department of Statistics and Actuarial Science at the University of Iowa. He received his Ph.D. in Actuarial Science from the University of Hong Kong in 2014, with dependence structures, risk measures, and optimal reinsurance being his research interests. He is a Fellow of the Society of Actuaries (FSA) and a Chartered Enterprise Risk Analyst (CERA). His research papers have been published in top-tier actuarial journals, such as ASTIN Bulletin: The Journal of the International Actuarial Association, Insurance: Mathematics and Economics, and Scandinavian Actuarial Journal.

Solutions Manual for Actuarial Mathematics for Life Contingent Risks - David C. M. Dickson 2013-08-12

This must-have manual provides detailed solutions to all of the 200+ exercises in Dickson, Hardy and Waters' Actuarial Mathematics for Life Contingent Risks, Second Edition. This groundbreaking text on the modern mathematics of life insurance is required reading for the Society of Actuaries' Exam MLC and also provides a solid preparation for the life contingencies material of the UK actuarial profession's exam CT5. Beyond the professional examinations, the textbook and solutions manual offer readers the opportunity to develop insight and understanding, and also offer practical advice for solving problems using straightforward, intuitive numerical methods. Companion spreadsheets illustrating these techniques are available for free download.

Pandemics: Insurance and Social Protection - María del Carmen Boado-Penas 2021

This open access book collects expert contributions on actuarial modelling and related topics, from machine

learning to legal aspects, and reflects on possible insurance designs during an epidemic/pandemic. Starting by considering the impulse given by COVID-19 to the insurance industry and to actuarial research, the text covers compartment models, mortality changes during a pandemic, risk-sharing in the presence of low probability events, group testing, compositional data analysis for detecting data inconsistencies, behavioural aspects in fighting a pandemic, and insurers' legal problems, amongst others. Concluding with an essay by a practicing actuary on the applicability of the methods proposed, this interdisciplinary book is aimed at actuaries as well as readers with a background in mathematics, economics, statistics, finance, epidemiology, or sociology.

Mathematics for Classical Information Retrieval: Roots and Applications - Dariush Alimohammadi 2010-06-01

This book is about Information Retrieval (IR), particularly Classical Information Retrieval (CIR). It looks at these topics through their mathematical roots. The mathematical bases of CIR are briefly reviewed, followed by the most important and interesting models of CIR, including Boolean, Vector Space, and Probabilistic. The primary goal of book is to create a context for understanding the principles of CIR by discussing its mathematical bases. This book can be helpful for LIS students who are studying IR but have no knowledge of mathematics. Weakness in math impairs the ability to understand current issues in IR. While LIS students are the main target of this book, it may be of interest to computer science and communications students as well.

Introduction to Quantitative Finance - Robert R. Reitano 2010-01-29

An introduction to many mathematical topics applicable to quantitative finance that teaches how to "think in mathematics" rather than simply do mathematics by rote. This text offers an accessible yet rigorous development of many of the fields of mathematics necessary for success in investment and quantitative finance, covering topics applicable to portfolio theory, investment banking, option pricing, investment, and insurance risk management. The approach emphasizes the mathematical framework provided by each mathematical discipline, and the application of each framework to the solution of finance problems. It emphasizes the thought process and mathematical approach taken to develop each result instead of the memorization of formulas to be applied (or misapplied) automatically. The objective is to provide a deep level of understanding of the relevant mathematical theory and tools that can then be effectively used in practice, to teach students how to "think in mathematics" rather than simply to do mathematics by rote. Each chapter covers an area of mathematics such as mathematical logic, Euclidean and other spaces, set theory and topology, sequences and series, probability theory, and calculus, in each case presenting only material that is most important and relevant for quantitative finance. Each chapter includes finance applications that demonstrate the relevance of the material presented. Problem sets are offered on both the mathematical theory and the finance applications sections of each chapter. The logical organization of the book and the judicious selection of topics make the text customizable for a number of courses. The development is self-contained and carefully explained to support disciplined independent study as well. A solutions manual for students provides solutions to the book's Practice Exercises; an instructor's manual offers solutions to the Assignment Exercises as well as other materials.

Mathematical Interest Theory - Leslie Jane Federer Vaaler 2009-02-19

Mathematical Interest Theory gives an introduction to how investments grow over time in a mathematically precise manner. The emphasis is on practical applications that give the reader a concrete understanding of why the various relationships should be true. Among the modern financial topics introduced are: arbitrage, options, futures, and swaps. The content of the book, along with an understanding of probability, will provide a solid foundation for readers embarking on actuarial careers. Mathematical Interest Theory includes more than 240 carefully worked examples. There are over 430 problems, and numerical answers are included in an appendix. A companion student solution manual has detailed solutions to the odd-numbered problems. Key Features • Detailed instruction on how to use the Texas Instruments BA II Plus and BA II Plus professional calculators. • Examples are worked out with the problem and solution delineated so that the reader can think about the problem before reading the solution presented in the text • Key formulas, facts and algorithms placed in boxes so that they stand out in the text, and new terms printed in boldface as they are introduced • Descriptive titles are given for the examples in the book,(i.e.,

“Finding $a(t)$ from δ ” or “Finding a bond's yield rate”)to help students skimming the book quickly find relevant material. • Exercises feature applied financial questions, • Writing activities for each chapter introduce each homework set.

Financial and Actuarial Mathematics - Wai-Sum Chan 2007

The Theory of Interest - Stephen G. Kellison 1991

1. The Measurement of Interest ; 2. Solution of Problems in Interest ; 3. Elementary Annuities ; 4. More General Annuities ; 5. Yield Rates ; 6. Amortization Schedules and Sinking Funds ; 7. Bond and Other Securities ; 8. Practical Applications ; 9. More Advanced Financial Analysis ; 10. A Stochastic Approach to Interest ; APPENDIXES I. Table of compound interest functions ; II. Table numbering the days of the year ; III. Basic mathematical review ; IV. Statistical background ; V. An introduction to finite differences ; VI. Iteration methods ; VII. Further analysis of varying annuities ; VIII. A general formula for amortization with step-rate amounts of principle ; Bibliography ; Answers to the exercises ; Index.

Financial Mathematics - Chris Ruckman 2005

Introduction to Insurance Mathematics - Annamaria Olivieri 2015-09-30

This second edition expands the first chapters, which focus on the approach to risk management issues discussed in the first edition, to offer readers a better understanding of the risk management process and the relevant quantitative phases. In the following chapters the book examines life insurance, non-life insurance and pension plans, presenting the technical and financial aspects of risk transfers and insurance without the use of complex mathematical tools. The book is written in a comprehensible style making it easily accessible to advanced undergraduate and graduate students in Economics, Business and Finance, as well as undergraduate students in Mathematics who intend starting on an actuarial qualification path. With the systematic inclusion of practical topics, professionals will find this text useful when working in insurance and pension related areas, where investments, risk analysis and financial reporting play a major role.