

1. Record Nr.	UNINA9910765489203321
Autore	Mavron Vassilis C.
Titolo	Elements of Mathematics for Economics and Finance // by Vassilis C. Mavron, Timothy N. Phillips
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	9783031439100 3031439104
Edizione	[2nd ed. 2023.]
Descrizione fisica	1 online resource (390 pages)
Collana	Classroom Companion: Economics, , 2662-2890
Disciplina	260
Soggetti	Mathematics Economics Finance, Public Business Management science Game theory Public Economics Applications of Mathematics Business and Management Game Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Preface to the Second Edition -- Contents -- 1 Essential Skills -- 1.1 Introduction -- 1.2 Numbers -- 1.2.1 Addition and Subtraction -- 1.2.2 Multiplication and Division -- 1.2.3 Evaluation of Arithmetical Expressions -- 1.3 Fractions -- 1.3.1 Multiplication and Division -- 1.4 Decimal Representation of Numbers -- 1.4.1 Standard Form -- 1.5 Percentages -- 1.6 Powers and Indices -- 1.7 Simplifying Algebraic Expressions -- 1.7.1 Multiplying Brackets -- 1.7.2 Factorization -- 2 Linear Equations -- 2.1 Introduction -- 2.2 Solution of Linear Equations -- 2.3 Solution of Simultaneous Linear Equations -- 2.4 Graphs of Linear Equations -- 2.4.1 Slope of a Straight Line -- 2.5 Budget Lines -- 2.6 Supply and Demand Analysis -- 2.6.1 Multicommodity Markets -- 3 Quadratic Equations -- 3.1 Introduction

-- 3.2 Graphs of Quadratic Functions -- 3.3 Quadratic Equations --
 3.4 Applications to Economics -- 4 Functions of a Single Variable --
 4.1 Introduction -- 4.2 Limits -- 4.3 Polynomial Functions -- 4.4
 Continuity -- 4.5 Reciprocal Functions -- 4.6 Inverse Functions -- 5
 The Exponential and Logarithmic Functions -- 5.1 Introduction -- 5.2
 Exponential Functions -- 5.3 Logarithmic Functions -- 5.4 Returns to
 Scale of Production Functions -- 5.4.1 Cobb-Douglas Production
 Functions -- 5.5 Compounding of Interest -- 5.6 Applications of the
 Exponential Function in EconomicModelling -- 6 Differentiation -- 6.1
 Introduction -- 6.2 Rules of Differentiation -- 6.2.1 Constant Functions
 -- 6.2.2 Linear Functions -- 6.2.3 Power Functions -- 6.2.4 Sums and
 Differences of Functions -- 6.2.5 Product of Functions -- 6.2.6
 Quotient of Functions -- 6.2.7 The Chain Rule -- 6.3 Exponential and
 Logarithmic Functions -- 6.4 Marginal Functions in Economics -- 6.4.1
 Marginal Revenue and Marginal Cost -- 6.4.2 Marginal Propensities.
 6.5 Approximation to Marginal Functions -- 6.6 Higher Order
 Derivatives -- 6.7 Production Functions -- 7 Maxima and Minima --
 7.1 Introduction -- 7.2 Local Properties of Functions -- 7.2.1
 Increasing and Decreasing Functions -- 7.2.2 Concave and Convex
 Functions -- 7.3 Local or Relative Extrema -- 7.4 Global or Absolute
 Extrema -- 7.5 Points of Inflection -- 7.6 Optimization of Production
 Functions -- 7.7 Optimization of Profit Functions -- 7.8 Other
 Examples -- 8 Partial Differentiation -- 8.1 Introduction -- 8.2
 Functions of Two or More Variables -- 8.3 Partial Derivatives -- 8.4
 Higher Order Partial Derivatives -- 8.5 Partial Rate of Change -- 8.6
 The Chain Rule and Total Derivatives -- 8.7 Some Applications of
 Partial Derivatives -- 8.7.1 Implicit Differentiation -- 8.7.2 Elasticity of
 Demand -- 8.7.3 Utility -- 8.7.4 Production -- 8.7.5 Graphical
 Representations -- 9 Optimization -- 9.1 Introduction -- 9.2
 Unconstrained Optimization -- 9.3 Constrained Optimization -- 9.3.1
 Substitution Method -- 9.3.2 Lagrange Multipliers -- 9.3.3 The
 Lagrange Multiplier : An Interpretation -- 9.4 Iso Curves -- 10
 Matrices and Determinants -- 10.1 Introduction -- 10.2 Matrix
 Operations -- 10.2.1 Scalar Multiplication -- 10.2.2 Matrix Addition --
 10.2.3 Matrix Multiplication -- 10.3 Solutions of Linear Systems of
 Equations -- 10.4 Cramer's Rule -- 10.5 More Determinants -- 10.6
 Special Cases -- 10.7 Eigenvalues and Eigenvectors -- 11 Integration
 -- 11.1 Introduction -- 11.2 Rules of Integration -- 11.3 Definite
 Integrals -- 11.4 Definite Integration: Area and Summation -- 11.5
 Producer's Surplus -- 11.6 Consumer's Surplus -- 11.7 Integration by
 Substitution -- 11.8 Partial Fractions in Integration -- 11.9 Integration
 by Parts -- 12 Linear Difference Equations -- 12.1 Introduction -- 12.2
 Difference Equations -- 12.3 First Order Linear Difference Equations.
 12.4 Stability -- 12.5 The Cobweb Model -- 12.6 Second Order Linear
 Difference Equations -- 12.6.1 Complementary Solutions -- 12.6.2
 Particular Solutions -- 12.6.3 Stability -- 13 Differential Equations --
 13.1 Introduction -- 13.2 First Order Linear Differential Equations --
 13.2.1 Stability -- 13.3 Nonlinear First Order Differential Equations --
 13.3.1 Separation of Variables -- 13.3.2 Integrating Factors -- 13.4
 Solow Differential Equation -- 13.5 Second Order Linear Differential
 Equations -- 13.5.1 The Homogeneous Case -- 13.5.2 The General
 Case -- 13.5.3 Stability -- A Differentials -- B Answers to Self-
 Assessment Questions -- Index.

Sommario/riassunto

Based on over 15 years' experience in the design and delivery of successful first-year courses, this book equips undergraduates with the mathematical skills required for degree courses in economics, finance, management, and business studies. The book starts with a summary of basic skills and takes its readers as far as constrained optimisation

helping them to become confident and competent in the use of mathematical tools and techniques that can be applied to a range of problems in economics and finance. Designed as both a course text and a handbook, the book assumes little prior mathematical knowledge beyond elementary algebra and is therefore suitable for students returning to mathematics after a long break. The fundamental ideas are described in the simplest mathematical terms, highlighting threads of common mathematical theory in the various topics. Features of the book include: a systematic approach: ideas are touched upon, introduced gradually and then consolidated through the use of illustrative examples; several entry points to accommodate differing mathematical backgrounds; numerous problems, with full solutions, and exercises to illustrate the theory and applications; key learning objectives and self-assessment questions provided for each chapter; full solutions to exercises, available to lecturers via the web. Vass Mavron is Emeritus Professor of Mathematics at Aberystwyth University. Tim Phillips is Professor of Applied Mathematics in the School of Mathematics at Cardiff University.
