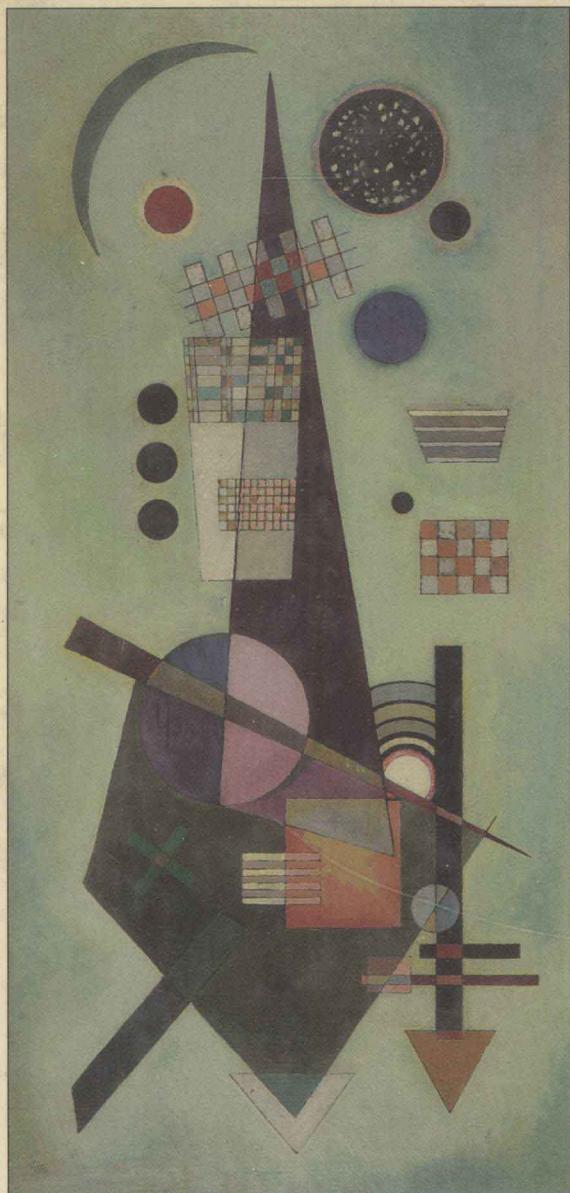


FOURTH EDITION



MARGARET L. LIAL
CHARLES D. MILLER

FINITE MATHEMATICS

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FOURTH EDITION

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American River College

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SCOTT, FORESMAN AND COMPANY
Glenview, Illinois London, England



TO THE STUDENT

If you want further help with this course, you may want to obtain a copy of the *Student's Solutions Manual* that accompanies this textbook. This manual provides detailed step-by-step solutions to the odd-numbered exercises in the textbook and can help you study and understand the course material. Your college bookstore either has this manual or can order it for you.

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FINITE MATHEMATICS

FOURTH EDITION.



Finite Mathematics, Fourth Edition, is a solid, applications-oriented text covering the noncalculus portions of mathematics needed by students majoring in business, management, economics, or the life or social sciences. Explanations and examples are clear, direct, and to the point; exercises are carefully graded; and numerous examples are provided that directly correspond to the exercises. Highlights of the text are the Extended Applications and abundant applied problems that show students how mathematics is used in the careers they are exploring. The only prerequisite for this book is a previous course in algebra.

KEY FEATURES

FLEXIBILITY *Finite Mathematics* has been organized to be as flexible as possible. Some instructors may choose to begin the course with Chapter 1 and cover the chapters on linear programming. Some may choose to begin the course with Chapter 5 on sets and counting and continue with probability, statistics, and other chapters as desired. The book will facilitate either course organization.

APPLICATIONS A wide range of applications is included in examples and exercise sets to motivate student interest. An Index of Applications, grouped by discipline, includes those applications given in the exercises, examples, and Extended Applications, and is located after the table of contents.

EXAMPLES Nearly 400 worked-out examples clearly illustrate the techniques and concepts presented and prepare students for success with the exercises. For clarity, the end of each example is indicated with the symbol ■.

EXERCISES More than 2500 exercises, including about 2025 drill problems and 475 applications, feature a wide range of difficulty from drill to challenging problems. A new format is used for exercises in this edition. Routine exercises are given first, followed by a clearly marked applications section arranged by discipline, with a descriptive heading for each application.

EXTENDED APPLICATIONS Special lengthy applications are included at the end of most chapters. Designed to help motivate students in the study of mathematics, the Extended Applications are derived from current literature in various fields and show how the course material can actually be applied.

FORMAT Important rules, definitions, theorems, and equations are enclosed in boxes and highlighted with a title in the margin, for ease of study and review. A second color is used to annotate equations, illuminate troublesome areas, and clarify concepts and processes. A new format in the exercise sets highlights the many diverse applications included in the book.

STUDY AIDS Each chapter ends with a list of key words presented in the chapter and an extensive set of review exercises. The key words are referenced to the section in which each appeared, for extra studying help.

■ CONTENT FEATURES

The idea of **mathematical models** of real-world applications from business, economics, social sciences, and life sciences is emphasized throughout the book, beginning in Chapter 1. Both the strengths and the limitations of models are discussed.

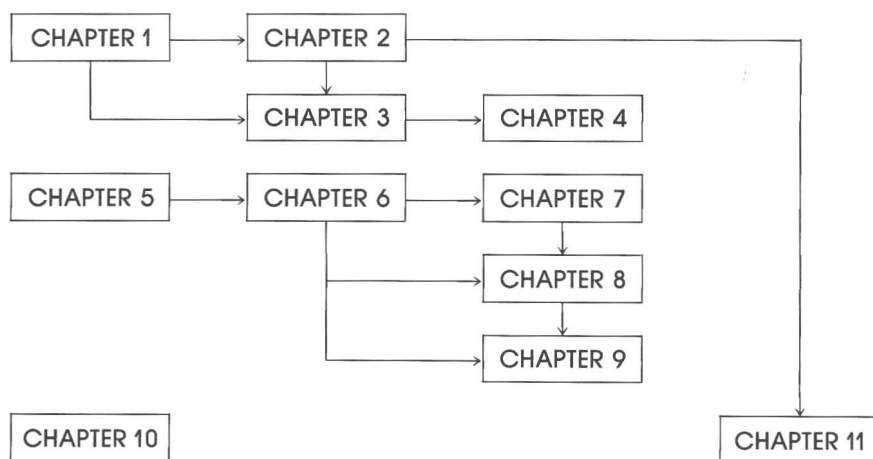
Chapter 1 on linear functions is an **optional review chapter**. Well-prepared students can go directly to Chapter 2, on matrix theory, or to Chapter 5, which leads to probability. For many students, Chapter 1 will serve as a convenient reference.

The book has **two complete chapters on linear programming**, one on the graphical method and one on the simplex method. Mixed constraints are handled with the Phase I/Phase II method. This method also provides one way to solve minimizing problems. A section using the dual approach to minimizing is also included for those instructors who prefer that approach.

The **discussion of permutations and combinations has been expanded** to two sections (Sections 5.3 and 5.4) to give more emphasis to the multiplication rule and to the differences between permutations and combinations.

The **chapter on probability has been rearranged** to improve the pedagogical flow and the clarity of the presentation.

The **flexibility of the text** is indicated in the following chart of chapter prerequisites. As shown, the course could begin with either Chapter 1 or Chapter 5, and Chapter 10 on the mathematics of finance could be covered discretely.



SUPPLEMENTS

The **Instructor's Guide and Solutions Manual** gives a lengthy set of test questions for each chapter, organized by section, plus answers to all the test questions. It also provides complete solutions to all of the even-numbered text exercises.

The **Instructor's Answer Manual** gives the answers to every text exercise, collected in one convenient location and presented in an easy-to-use format.

The **Student's Solutions Manual**, available for purchase by students, provides detailed, worked-out solutions to all of the odd-numbered text exercises, plus a chapter test for each chapter. Answers to the chapter test questions are given at the back of the book.

The **Scott, Foresman Test Generator for Mathematics** enables instructors to select questions by section or chapter or to use a ready-made test for each chapter. Instructors may generate tests in multiple-choice or open-response formats, scramble the order of questions while printing, and produce multiple versions of each test (up to 9 with Apple, up to 25 with IBM). The system features a preview option that allows instructors to view questions before printing, to regenerate variables, and to replace or skip questions if desired. A Macintosh version of the Test Generator will be available.

Computer Applications for Finite Mathematics and Calculus by Donald R. Coscia is a softbound textbook packaged with two diskettes (in Apple II and IBM-PC versions) with programs and exercises keyed to the text. The programs

allow students to solve meaningful problems without the difficulties of extensive computation. This book bridges the gap between the text and the computer by providing additional explanations and exercises for solution using a micro-computer. Appropriate exercises in *Finite Mathematics* are identified by the heading “For the Computer.”

A set of two-color **overhead transparencies** showing charts, figures, and portions of examples is available and can be used to accompany a lecture.

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CONTENTS

Index of Applications xv

1 LINEAR MODELS 1

- 1.1 Linear Equations and Inequalities in One Variable 2
- 1.2 Linear Functions 8
- 1.3 Slope and Equations of a Line 21
- 1.4 Linear Mathematical Models 32
- 1.5 Constructing Mathematical Models (Optional) 44
- Review Exercises 58
- Extended Application: Estimating Seed Demands—The Upjohn Company 61
- Extended Application: Marginal Cost—Booz, Allen & Hamilton 62

2 SYSTEMS OF LINEAR EQUATIONS AND MATRICES 65

- 2.1 Systems of Linear Equations; the Echelon Method 66
- 2.2 Solution of Linear Systems by the Gauss-Jordan Method 79
- 2.3 Basic Matrix Operations 90
- 2.4 Multiplication of Matrices 98
- 2.5 Matrix Inverses 108
- 2.6 Input-Output Models 119
- Review Exercises 126

Extended Application: Routing	129
Extended Application: Contagion	131
Extended Application: Leontief's Model of the American Economy	132

3 LINEAR PROGRAMMING: THE GRAPHICAL METHOD 137

3.1 Graphing Linear Inequalities	138
3.2 Mathematical Models for Linear Programming	146
3.3 Solving Linear Programming Problems Graphically	154
Review Exercises	165

4 LINEAR PROGRAMMING: THE SIMPLEX METHOD 167

4.1 Slack Variables and the Pivot	168
4.2 Solving Maximization Problems	176
4.3 Mixed Constraints	187
4.4 Duality (Optional)	200
Review Exercises	210
Extended Application: Making Ice Cream	213
Extended Application: Merit Pay—The Upjohn Company	215

5 SETS AND COUNTING 217

5.1 Sets	218
5.2 Applications of Venn Diagrams	227
5.3 Permutations	236
5.4 Combinations	243
5.5 The Binomial Theorem (Optional)	253
Review Exercises	257

6 PROBABILITY 260

- 6.1 Basics of Probability 261
- 6.2 Further Probability Rules 270
- 6.3 Conditional Probability 283
- 6.4 Bayes' Formula 297
- 6.5 Applications of Counting 304
- 6.6 Bernoulli Trials 312
- Review Exercises 322
- Extended Application: Making a First Down 326
- Extended Application: Medical Diagnosis 326

7 STATISTICS AND PROBABILITY DISTRIBUTIONS 328

- 7.1 Basic Properties of Probability Distributions 329
- 7.2 Expected Value 336
- 7.3 Variance and Standard Deviation 348
- 7.4 The Normal Distribution 358
- 7.5 The Normal Curve Approximation to the Binomial Distribution 370
- Review Exercises 378
- Extended Application: Optimal Inventory for a Service Truck 381
- Extended Application: Bidding on a Potential Oil Field—Signal Oil 382

8 MARKOV CHAINS 385

- 8.1 Basic Properties of Markov Chains 386
- 8.2 Regular Markov Chains 396
- 8.3 Absorbing Markov Chains 404
- Review Exercises 414

9 DECISION THEORY 417

- 9.1 Decision Making 418
- 9.2 Strictly Determined Games 423
- 9.3 Mixed Strategies 430
- Review Exercises 441
- Extended Application: Decision Making in Life Insurance 443
- Extended Application: Decision Making in the Military 446

10 MATHEMATICS OF FINANCE 450

- 10.1 Simple Interest and Discount 451
- 10.2 Compound Interest 457
- 10.3 Sequences 465
- 10.4 Annuities 473
- 10.5 Present Value of an Annuity; Amortization 481
- Review Exercises 488
- Extended Application: A New Look at Athletes' Contracts 491
- Extended Application: Present Value 493

11 DIGRAPHS AND NETWORKS 496

- 11.1 Graphs and Digraphs 497
- 11.2 Dominance Digraphs 501
- 11.3 Communication Digraphs 507
- 11.4 Networks 513
- Review Exercises 520

 **TABLES 523**

Combinations 525

Area Under a Normal Curve 526

Compound Interest 528

Present Value 529

Amount of an Annuity 530

Present Value of an Annuity 531

Answers to Selected Exercises 533

Index 569

INDEX OF APPLICATIONS

BUSINESS AND ECONOMICS

- Advertising, 286, 314, 415, 439
- Airline routing, 130
- Airline usage, 302
- Amortization, 483, 485, 486, 487, 490
- Annuities, 482, 486
- Appliance reliability, 303
- Athletes' contracts, 491
- Average cost, 41
- Bakery income, 184
- Bakery orders, 117
- Bank discount, 456, 490
- Banking, use of computers in, 294
- Bankruptcy, 380
- Battery life, 356
- Bidding on a potential oil field, 382
- Blending milk, 152, 162
- Blending seed, 198
- Blending a soft drink, 199
- Break-even analysis, 36, 42, 60
- Break-even point, 41, 42
- Breeding cats, income from, 176
- Brewery repair costs and production levels, 54
- Car payments, 483, 486
- Car purchases, 319
- Car rental, 7, 20
- Charitable contributions, 183
- Charitable trust, 487
- Chicken farming, 233
- Christmas card production, 419
- Citrus farming, 418–19
- Cola consumption, 235
- Company earnings, 60
- Company training programs, 396, 414
- Competing stores, 388, 394, 399, 429, 430
- Concert preparations, 421
- Consumer credit, 303, 456
- Consumer satisfaction, 320
- Contractor bidding, 422
- Correlation of sales and profits, 53
- Correlation of stores and sales, 50
- Cost analysis, 34, 102, 106, 166
- Credit applications, 225
- Credit cards, 415
- Currency, 76
- Defective items, production of, 300
- Delinquent taxes, 456
- Demand function, 15–16
- Depreciation
 - straight-line, 38, 41, 52, 56, 60, 473
 - sum-of-the-years'-digits, 44, 46, 52, 56, 60
- Doubling time, 463, 464, 465
- Dry cleaning, 388, 394, 399
- Effect of revenue on price, 57
- Equilibrium demand, 17
- Equilibrium price, 17
- Equilibrium supply, 17
- Farm profit, 170, 176, 187, 208
- Fast food, consumption of, 319
- Finance, 145, 152, 163, 197
- Franchise fees, 21
- Hotel occupancy, 346
- Ice cream manufacturing, 213–14
- Individual retirement accounts, 464, 480
- Inflation, 464
- Inheritance income, 487
- Input-output models, 119–24, 128
 - closed, 122, 123, 125
 - open, 122, 124
- Insurance, 151, 161, 340, 346, 394
- Interest on investments, 4, 7
- Inventory, 40, 91, 93, 95, 381–82
- Investment habits, 235
- Investments
 - comparing, 127, 212, 464
 - and economic conditions, 303, 420
 - interest on, 4, 7, 79, 118, 198
- IRAs, 464, 480
- Job qualifications, 303
- Labor relations, 441
- Labor unions, 29
- Land development, 395, 420
- Land use, 395
- Life insurance, 443–45
- Light bulb life, 368
- Linear cost function, 36, 59
- Loan interest, 79, 456
- Loan repayment, 453–55, 456, 461, 490
- Locating oil, 324
- Machinery repairs, 421, 422
- Manufacturing cost, 31
- Marginal cost, 35, 40, 62
- Market share, 394
- Marketing a new product, 421
- Maximizing profit, 146, 151, 152, 161, 162, 166, 175, 176, 184, 185, 186, 212
- Maximizing revenue, 151–52, 162, 175, 183
- Merit pay, 215–16
- Minimizing cost, 145, 146, 161, 162, 192–93, 194, 197, 518
- Mining exploration, 319
- Negative interest, 465
- Net profit, 7

- New car purchases, 319
- Oil distribution, 128
- Packaging, 90
- Personnel screening, 320
- Pet store stock, 295
- Present value, 493
- Price-to-earnings ratio, 224
- Pricing, 439
- Printing orders, 128
- Process control, 353, 357
- Production costs, 39, 197, 208
- Production rates, 78
- Production requirements, 118, 127
- Production scheduling, 127, 143, 145, 146
- Profit, 59
 - estimating, 346
 - maximizing, 146, 151, 152, 161, 162, 166, 175, 176, 184, 185, 186, 212
 - net, 7
 - optimum, 208
- Purchase orders, 439–40
- Quality control, 295, 301, 303, 306, 320, 322, 324, 368, 374, 377, 380, 403
- Rental fees, 19
- Return on investment, 59, 79, 118, 198
- Revenue, 19
 - maximizing, 151–52, 162, 175, 183
- Revenue/cost/profit, 7
- Salary, 473
- Sales, 10, 19, 31, 467
- Sales accounts, rating, 346
- Sales analysis, 33, 40, 98
- Sales estimation, 42, 47, 50, 53
- Sales management, 403
- Sales promotion, 356
- Savings annuity, 475, 479, 480, 490
- Savings deposits, 456, 464, 470, 477
- Seed demands, 61
- Shipping costs, 89, 151, 152, 161, 162, 192–93, 194, 197, 198
- Shipping decisions, 145, 146
- Sinking fund, 477, 480, 490
- Stock reports, 128
- Stock returns, 379
- Storage capacity, 148, 158
- Straight-line depreciation, 38, 41, 52, 56, 60, 473

- Sum-of-the-years'-digits depreciation, 44, 46, 52, 56, 60
- Supply and demand, 15, 16, 18, 20, 21, 59
- Supply function, 59
- Survey results, 322
- Tax and interest, 7
- Telephone service needs, 53
- Television advertising, 303
- Time management, 145, 166
- Training programs, 396, 414
- Transportation costs, 89, 151, 152, 161, 162, 192–93, 194, 197, 198
- Unions, 29
- Utility company management, 230
- Worker error, 298

GENERAL

- Chinese New Year celebrations, 233
- Construction, 153, 164
- Contests, 348
- Family food expenditures, 21
- Family income, 78
- Football, 326, 429
- Gambler's ruin, 406–7, 414
- Grocery purchases, 97
- I Ching*, 321
- Magazine readership, 229–30
- Military decisions, 446–49
- Music, 233
- Native American ceremonies, 232
- Postage costs, 61
- Routing, 129–30
- Tuition, 8
- War games, 429

LIFE SCIENCES

- Animal activity, 128
- Animal growth, 97
- Ant population growth, 43
- Anti-smoking campaign, 422
- Bacteria
 - food requirements of, 90
 - growth of, 43, 55
- Blending nutrients, 186, 199, 206
- Blood antigens, 234

- Blood pressure, 346
- Blood sugar and cholesterol levels, 61
- Color blindness, 281, 296, 321
- Contagion, 131–32, 413
- Correlation of height and weight, 55
- Dietetics, 79, 97, 107, 149, 153, 163, 198, 209
- Drugs
 - effectiveness of, 320, 377
 - prescribing, 438
 - screening, 296
 - sequencing, 243
 - side effects of, 320
- Fish
 - effects of water pollution on, 31
 - food requirements of, 26, 90
- Flu inoculations, 321
- Food web, 130
- Genetics, 234, 245, 281, 282, 291, 295, 393, 403, 416
- Hazardous waste, 227
- Health care, 153, 163, 198, 209
- Height, estimating, 31
- Hepatitis blood test, 303
- Insect classification, 243
- Insecticide spraying, 434
- Medical diagnosis, 326
- Medical research, 416
- Plant foods, mixing, 90
- Population growth, 473
- Predator food requirements, 153, 163
- Radiation, effects of, 320
- Rats
 - diets of, 380
 - weight gain of, 34
- Sickle cell anemia, 325
- Soil fertilization, 54
- Surgery survival rate, 320
- Thyroid problems, 227
- Toxemia test, 304
- Vitamin A deficiency, 320
- Vitamin requirements, 369

PHYSICAL SCIENCES

- Blending chemicals, 199, 210
- Blending gasoline, 199, 210
- Celsius and Fahrenheit temperatures, 56

Octane rating, 8
Seeding storms, 347
Weather, 404

SOCIAL SCIENCES

Border patrol, 429
Cities, distances between,
 515, 519
Class size, 44
Commuting times, 380
Education, 235, 369, 404, 423

Election results, 497, 501
Estimation of time, 43
High school and college GPAs, 56
Housing patterns, 395
Immigration, 32
Interpersonal relationships, 501
I.Q. scores, 380
Law enforcement, 440
Minority attendance at
 community colleges, 321
Political affiliation, 304
Politics, 186, 442
Preference tests, 506–7
Randomized response method, 325

Rat maze, 413
Reelection strategy, 423
Rumors, 404
Social class changes, 386
Stimulus effect, 43
Student retention, 412
Testing, 321
Tournament winners, 501,
 504, 506
Traffic control, 88
Transportation, 412
Voting, 31, 32, 304, 395
Work-related illness and
 injury, 32

1

Linear Models

1.1 Linear Equations and Inequalities in One Variable

1.2 Linear Functions

1.3 Slope and Equations of a Line

1.4 Linear Mathematical Models

1.5 Constructing Mathematical Models (Optional)

Review Exercises

Extended Application

Estimating Seed Demands — The Upjohn Company

Extended Application

Marginal Cost — Booz, Allen & Hamilton