



GLOBAL
EDITION



Finite Mathematics with Applications

in the Management, Natural, and Social Sciences

ELEVENTH EDITION

Margaret L. Lial • Thomas W. Hungerford • John P. Holcomb • Bernadette Mullins

ALWAYS LEARNING

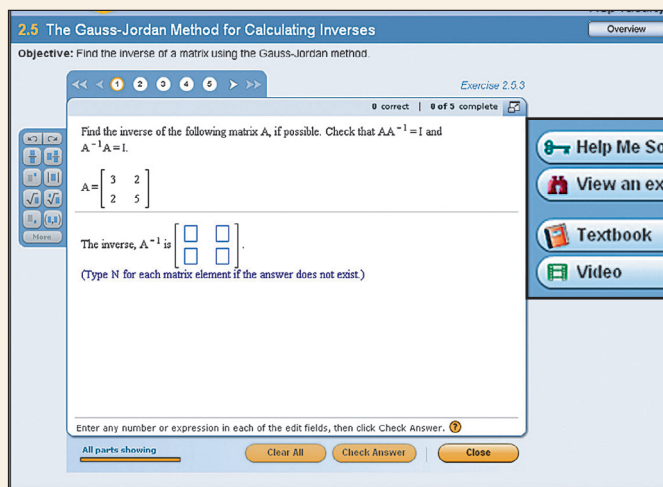
PEARSON

BREAKTHROUGH

To improving results

4 Reasons to Use MyMathLab[®] for Finite Mathematics

- 1 Thousands of high-quality exercises.** Algorithmic exercises of all types and difficulty levels are available to meet the needs of students with diverse mathematical backgrounds. We've also added even more conceptual exercises to the already abundant skill and application exercises.
- 2 Helps students help themselves.** Homework isn't effective if students don't do it. MyMathLab not only grades homework, but it also does the more subtle task of providing specific feedback and guidance along the way. As an instructor, you can control the amount of guidance students receive.



Breaks the problem into manageable steps. Students enter answers along the way.

Reviews a problem like the one assigned.

Links to the appropriate section in the textbook.

Features an instructor explaining the concept.

- 3 Addresses gaps in prerequisite skills.** Our *Getting Ready for Finite Mathematics* content addresses gaps in prerequisite skills that can impede student success. MyMathLab identifies precise areas of weakness, then automatically provides remediation for those skills.
- 4 Adaptive Study Plan.** MyMathLab's Adaptive Study Plan makes studying more efficient and effective. Each student's work and activity are assessed continually in real time. The data and analytics are used to provide personalized content to remediate any gaps in understanding.

Since 2001, more than 15 million students at more than 1,950 colleges have used MyMathLab. Users have reported significant increases in pass rates and retention. Why? Students do more work and get targeted help when they need it. See www.mymathlab.com/success_report.html for the latest information on how schools are successfully using MyMathLab.

Learn more at www.mymathlab.com

Finite Mathematics with Applications In the Management, Natural, and Social Sciences, Global Edition

Table of Contents

Cover

Title

Copyright

Contents

Preface

To the Student

Prerequisite Skills Test

CHAPTER 1 Algebra and Equations

1.1 The Real Numbers

1.2 Polynomials

1.3 Factoring

1.4 Rational Expressions

1.5 Exponents and Radicals

1.6 First-Degree Equations

1.7 Quadratic Equations

Summary and Review

CASE STUDY 1 Consumers Often Need to Just Do the Math

CHAPTER 2 Graphs, Lines, and Inequalities

2.1 Graphs

2.2 Equations of Lines

2.3 Linear Models

2.4 Linear Inequalities

2.5 Polynomial and Rational Inequalities

Summary and Review

CASE STUDY 2 Using Extrapolation and Interpolation for Prediction

CHAPTER 3 Functions and Graphs

Table of Contents

3.1 Functions

3.2 Graphs of Functions

3.3 Applications of Linear Functions

3.4 Quadratic Functions and Applications

3.5 Polynomial Functions

3.6 Rational Functions

Summary and Review

CASE STUDY 3 Architectural Arches

CHAPTER 4 Exponential and Logarithmic Functions

4.1 Exponential Functions

4.2 Applications of Exponential Functions

4.3 Logarithmic Functions

4.4 Logarithmic and Exponential Equations

Summary and Review

CASE STUDY 4 Gapminder.org

CHAPTER 5 Mathematics of Finance

5.1 Simple Interest and Discount

5.2 Compound Interest

5.3 Annuities, Future Value, and Sinking Funds

5.4 Annuities, Present Value, and Amortization

Summary and Review

CASE STUDY 5 Continuous Compounding

CHAPTER 6 Systems of Linear Equations and Matrices

6.1 Systems of Two Linear Equations in Two Variables

6.2 Larger Systems of Linear Equations

6.3 Applications of Systems of Linear Equations

6.4 Basic Matrix Operations

6.5 Matrix Products and Inverses

6.6 Applications of Matrices

Summary and Review

CASE STUDY 6 Matrix Operations and Airline Route Maps

CHAPTER 7 Linear Programming

7.1 Graphing Linear Inequalities in Two Variables

Table of Contents

7.2 Linear Programming: The Graphical Method

7.3 Applications of Linear Programming

7.4 The Simplex Method: Maximization

7.5 Maximization Applications

7.6 The Simplex Method: Duality and Minimization

7.7 The Simplex Method: Nonstandard Problems

Summary and Review

CASE STUDY 7 Cooking with Linear Programming

CHAPTER 8 Sets and Probability

8.1 Sets

8.2 Applications of Venn Diagrams and Contingency Tables

8.3 Introduction to Probability

8.4 Basic Concepts of Probability

8.5 Conditional Probability and Independent Events

8.6 Bayes Formula

Summary and Review

CASE STUDY 8 Medical Diagnosis

CHAPTER 9 Counting, Probability Distributions, and Further Topics in Probability

9.1 Probability Distributions and Expected Value

9.2 The Multiplication Principle, Permutations, and Combinations

9.3 Applications of Counting

9.4 Binomial Probability

9.5 Markov Chains

9.6 Decision Making

Summary and Review

CASE STUDY 9 Quick Draw® from the New York State Lottery

CHAPTER 10 Introduction to Statistics

10.1 Frequency Distributions

10.2 Measures of Center

10.3 Measures of Variation

10.4 Normal Distributions and Boxplots

10.5 Normal Approximation to the Binomial Distribution

Table of Contents

Summary and Review

CASE STUDY 10 Standard Deviation as a Measure of Risk

Appendix A Graphing Calculators

Appendix B Tables

Table 1: Formulas from Geometry

Table 2: Areas under the Normal Curve

Appendix C Learning Objectives

Appendix D Solutions to Prerequisite Skills Test

Answers to Selected Exercises

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Chapter 7

Chapter 8

Chapter 9

Chapter 10

Index of Companies, Products, and Agencies

A

B

C

D

E

F

G

H

I

J

K

L

M

Table of Contents

N
P
Q
R
S
T
U
V
W
X

Index of Applications

Subject Index

A
B
C
D
E
F
G
H
I
L
M
N
O
P
Q
R
S
T
U
V
W

Table of Contents

X

Y

Z

Photo Credits