

Calculus

Early Transcendentals

SECOND EDITION

William Briggs • Lyle Cochran • Bernard Gillett

ALWAYS LEARNING PEARSON



Calculus: Early Transcendentals, Global Edition

Table of Contents

Cover

Title Page

Copyright Page

Contents

Preface

Acknowledgments

Credits

- 1 Functions
 - 1.1 Review of Functions
 - 1.2 Representing Functions
 - 1.3 Inverse, Exponential, and logarithmic Functions
 - 1.4 Trigonometric Functions and Their inverses

Review Exercises

2 Limits

- 2.1 The idea of limits
- 2.2 Definitions of limits
- 2.3 Techniques for computing limits
- 2.4 Infinite limits
- 2.5 Limits at infinity
- 2.6 Continuity
- 2.7 Precise definitions of limits

Review Exercises

3 Derivatives

- 3.1 Introducing the derivative
- 3.2 Working with derivatives
- 3.3 Rules of differentiation
- 3.4 The Product and Quotient rules
- 3.5 Derivatives of Trigonometric Functions
- 3.6 Derivatives as rates of change
- 3.7 The chain rule
- 3.8 Implicit differentiation
- 3.9 Derivatives of logarithmic and Exponential Functions



- 3.10 Derivatives of inverse Trigonometric Functions
- 3.11 Related rates

Review Exercises

4 Applications of the derivative

- 4.1 Maxima and minima
- 4.2 What derivatives Tell us
- 4.3 Graphing Functions
- 4.4 Optimization Problems
- 4.5 Linear approximation and differentials
- 4.6 Mean Value Theorem
- 4.7 Lhôpitals rule
- 4.8 Newtons method
- 4.9 Antiderivatives

Review Exercises

5 Integration

- 5.1 Approximating areas under curves
- 5.2 Definite integrals
- 5.3 Fundamental Theorem of calculus
- 5.4 Working with integrals
- 5.5 Substitution rule

Review Exercises

6 Applications of integration

- 6.1 Velocity and net change
- 6.2 Regions between curves
- 6.3 Volume by slicing
- 6.4 Volume by shells
- 6.5 Length of curves
- 6.6 Surface area
- 6.7 Physical applications
- 6.8 Logarithmic and Exponential Functions revisited
- 6.9 Exponential models
- 6.10 Hyperbolic Functions

Review Exercises

7 Integration Techniques

- 7.1 Basic approaches
- 7.2 Integration by Parts
- 7.3 Trigonometric integrals



- 7.4 Trigonometric substitutions
- 7.5 Partial Fractions
- 7.6 Other integration strategies
- 7.7 Numerical integration
- 7.8 Improper integrals
- 7.9 Introduction to differential Equations

Review Exercises

8 Sequences and infinite series

- 8.1 An overview
- 8.2 Sequences
- 8.3 Infinite series
- 8.4 The divergence and integral Tests
- 8.5 The ratio, root, and comparison Tests
- 8.6 Alternating series

Review Exercises

9 Power series

- 9.1 Approximating Functions with Polynomials
- 9.2 Properties of Power series
- 9.3 Taylor series
- 9.4 Working with Taylor series

Review Exercises

10 Parametric and Polar curves

- 10.1 Parametric Equations
- 10.2 Polar coordinates
- 10.3 Calculus in Polar coordinates
- 10.4 Conic sections

Review Exercises

11 Vectors and Vector-Valued Functions

- 11.1 Vectors in the Plane
- 11.2 Vectors in Three dimensions
- 11.3 Dot Products
- 11.4 Cross Products
- 11.5 Lines and curves in space
- 11.6 Calculus of Vector-Valued Functions
- 11.7 Motion in space
- 11.8 Length of curves
- 11.9 Curvature and normal Vectors



Review Exercises

12 Functions of several Variables

- 12.1 Planes and surfaces
- 12.2 Graphs and level curves
- 12.3 Limits and continuity
- 12.4 Partial derivatives
- 12.5 The chain rule
- 12.6 Directional derivatives and the Gradient
- 12.7 Tangent Planes and linear approximation
- 12.8 Maximum/minimum Problems
- 12.9 Lagrange multipliers

Review Exercises

13 Multiple integration

- 13.1 Double integrals over rectangular regions
- 13.2 Double integrals over General regions
- 13.3 Double integrals in Polar coordinates
- 13.4 Triple integrals
- 13.5 Triple integrals in cylindrical and spherical coordinates
- 13.6 Integrals for mass calculations
- 13.7 Change of Variables in multiple integrals

Review Exercises

14 Vector calculus

- 14.1 Vector Fields
- 14.2 Line integrals
- 14.3 Conservative Vector Fields
- 14.4 Greens Theorem
- 14.5 Divergence and curl
- 14.6 Surface integrals
- 14.7 Stokes Theorem
- 14.8 Divergence Theorem

Review Exercises

Appendix A Algebra review

Appendix B Proofs of selected Theorems

Answers

Index

Table of integrals



