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Nota di contenuto	Introduction to Integral Calculus: Systematic Studies with Engineering Applications for Beginners; CONTENTS; FOREWORD; PREFACE; BIOGRAPHIES; INTRODUCTION; ACKNOWLEDGMENT; 1 Antiderivative(s) [or Indefinite Integral(s)]; 1.1 Introduction; 1.2 Useful Symbols, Terms, and Phrases Frequently Needed; 1.3 Table(s) of Derivatives and their corresponding Integrals; 1.4 Integration of Certain Combinations of Functions; 1.5 Comparison Between the Operations of Differentiation and Integration; 2 Integration Using Trigonometric Identities; 2.1 Introduction 2.2 Some Important Integrals Involving sin x and cos x2.3 Integrals of the Form B;(dx/(asin x + b cosx)), where a, r; 3a Integration by Substitution: Change of Variable of Integration; 3a.1 Introduction; 3a.2 Generalized Power Rule; 3a.3 Theorem; 3a.4 To Evaluate Integrals of the Form B; a sin x + b cos x/c sin x + d cos x dx; where a, b, c, and d are constant; 3b Further Integration by Substitution: Additional

Standard Integrals; 3b.1 Introduction; 3b.2 Special Cases of Integrals and Proof for Standard Integrals; 3b.3 Some New Integrals; 3b.4 Four More Standard Integrals
4a Integration by Parts 4a.1 Introduction; 4a.2 Obtaining the Rule for Integration by Parts; 4a.3 Helpful Pictures Connecting Inverse Trigonometric Functions with Ordinary Trigonometric Functions; 4a.4 Rule for Proper Choice of First Function; 4b Further Integration by Parts: Where the Given Integral Reappears on Right-Hand Side; 4b.1 Introduction; 4b.2 An Important Result: A Corollary to Integration by Parts; 4b.3 Application of the Corollary to Integration by Parts to Integrals that cannot be Solved Otherwise; 4b.4 Simpler Method(s) for Evaluating Standard Integrals
4b.5 To Evaluate x2 + bx + cdx5 Preparation for the Definite Integral: The Concept of Area; 5.1 Introduction; 5.2 Preparation for the Definite Integral; 5.3 The Definite Integral as an Area; 5.4 Definition of Area in Terms of the Definite Integral; 5.5 Riemann Sums and the Analytical Definition of the Definite Integral; 6a The Fundamental Theorems of Calculus; 6a.1 Introduction; 6a.2 Definite Integrals; 6a.3 The Area of Function A(x); 6a.4 Statement and Proof of the Second Fundamental Theorem of Calculus; 6a.5 Differentiating a Definite Integral with Respect to a Variable Upper Limit
6b The Integral Function x1 1/ t dt, (x > 0) Identified as ln x or logex 6b.1 Introduction; 6b.2 Definition of Natural Logarithmic Function; 6b.3 The Calculus of ln x; 6b.4 The Graph of the Natural Logarithmic Function ln x; 6b.5 The Natural Exponential Function [exp(x) or ex]; 7a Methods for Evaluating Definite Integrals; 7a.1 Introduction; 7a.2 The Rule for Evaluating Definite Integrals; 7a.3 Some Rules (Theorems) for Evaluation of Definite Integrals; 7a.4 Method of Integration by Parts in Definite Integrals; 7b Some Important Properties of Definite Integrals; 7b.1 Introduction
7b.2 Some Important Properties of Definite Integrals

Sommario/riassunto

An accessible introduction to the fundamentals of calculus needed to solve current problems in engineering and the physical sciences Integration is an important function of calculus, and Introduction to Integral Calculus combines fundamental concepts with scientific problems to develop intuition and skills for solving mathematical problems related to engineering and the physical sciences. The authors provide a solid introduction to integral calculus and feature applications of integration, solutions of differential equations, and evaluation methods. With logical organization coup