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Nota di contenuto	Differential and Integral Calculus; CONTENTS; Chapter I PRELIMINARY REMARKS ON ANALYTICAL GEOMETRY AND VECTOR ANALYSIS; 1. Rectangular Co-ordinates and Vectors; 2. The Area of a Triangle, the Volume of a Tetrahedron, the Vector Multiplication of Vectors; 3. Simple Theorems on Determinants of the Second and Third Order; 4. Affine Transformations and the Multiplication of Determinants; Chapter II FUNCTIONS OF SEVERAL VARIABLES AND THEIR DERIVATIVES; 1. The Concept of Function in the Case of Several Variables; 2. Continuity; 3. The Derivatives of a Function 4. The Total Diflerential of a Function and its Geometrical Meaning5. Functions of Functions (Compound Functions) and the Introduction of New Independent Variables; 6. The Mean Value Theorem and Taylor's Theorem for Functions of Several Variables; 7. The Application of Vector Methods; APPENDIX; 1. The Principle of the Point of Accumulation in Several Dimensions and its Applications; 2. The Concept of Limit for Functions of Several Variables; 3. Homogeneous Functions; Chapter III DEVELOPMENTS AND APPLICATIONS OF THE

DIFFERENTIAL CALCULUS; 1. Implicit Functions
2. Curves and Surfaces in Implicit Form3. Systems of Functions, Transformations, and Mappings; 4. Applications; 5. Families of Curves, Families of Surfaces, and their Envelopes; 6. Maxima and Minima; APPENDIX; 1. Sufficient Conditions for Extreme Values; 2. Singular Points of Plane Curves; 3. Singular Points of Surfaces; 4. Connexion between Euler's and Lagrange's Representations of the Motion of a Fluid; 5. Tangential Representation of a Closed Curve; Chapter IV MULTIPLE INTEGRALS; 1. Ordinary Integrals as Functions of a Parameter
2. The Integral of a Continuous Function over a Region of the Plane or of Space3. Reduction of the Multiple Integral to Repeated Single Integrals; 4. Transformation of Multiple Integrals; 5. Improper Integrals; 6. Geometrical Applications; 7. Physical Applications; APPENDIX; 1. The Existence of the Multiple Integral; 2. General Formula for the Area (or Volume) of a Region bounded by Segments of Straight Lines or Plane Areas (Guldin's Formula). The Polar Planimeter; 3. Volumes and Areas in Space of any Number of Dimensions; 4. Improper Integrals as Functions of a Parameter
5. The Fourier Integral6. The Eulerian Integrals (Gamma Function); 7. Differentiation and Integration to Fractional Order. Abel's Integral Equation; 8. Note on the Definition of the Area of a Curved Surface; Chapter V INTEGRATION OVER REGIONS IN SEVERAL DIMENSIONS; 1. Line Integrals; 2. Connexion between Line Integrals and Double Integrals in the Plane. (The Integral Theorems of Gauss, Stokes, and Green); 3. Interpretation and Applications of the Integral Theorems for the Plane; 4. Surface Integrals; 5. Gauss's Theorem and Green's Theorem in Space; 6. Stokes's Theorem in Space
7. The Connexion between Differentiation and Integration for Several Variables

Sommario/riassunto

Differential and Integral Calculus, Volume 2:"Unlike modern mathematicians who pursue their research apart from engineering or physical applications, Richard Courant was adverse to abstract theories and vague theorems. The topics covered in this set will provide the reader with a solid background to understanding the mathematics of heat conduction, electricity and magnetism, fluid dynamics and elasticity." -Amazon Review This book includes not only calculational techniques, but also an introduction to real analysis, good mathematical reasoning, and proof