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Nota di contenuto	Contents; Preface and Acknowledgments; Introduction; 1 Early Fixed Point Theorems; 1.1 The Picard-Banach Theorem; 1.2 Vector Fields on Spheres; 1.3 Proof of the Brouwer Theorem and Corollaries; 1.3.1 A Counter Example; 1.3.2 Applications of the Brouwer Theorem; 1.3.3 The Perron-Frobenius Theorem; 1.3.4 Google; A Billion Dollar Fixed Point Theorem; 1.4 Fixed Point Theorems for Groups of Affine Maps of R^n ; 1.4.1 Affine Maps and Actions; 1.4.2 Affine Actions of Non Compact Groups; 2 Fixed Point Theorems in Analysis; 2.1 The Schauder-Tychonoff Theorem 2.1.1 Proof of the Schauder-Tychonoff Theorem2.2 Applications of the Schauder-Tychonoff Theorem; 2.3 The Theorems of Hahn, Kakutani and Markov-Kakutani; 2.4 Amenable Groups; 2.4.1 Amenable Groups; 2.4.2 Structure of Connected Amenable Lie Groups; 3 The Lefschetz Fixed Point Theorem; 3.1 The Lefschetz Theorem for Compact Polyhedra; 3.1.1 Projective Spaces; 3.2 The Lefschetz Theorem for a Compact Manifold; 3.2.1 Preliminaries from Differential Topology; 3.2.2 Transversality; 3.3 Proof of the Lefschetz Theorem; 3.4 Some Applications; 3.4.1 Maximal Tori in Compact Lie Groups 3.4.2 The Poincare-Hopf's Index Theorem3.5 The Atiyah-Bott Fixed Point Theorem; 3.5.1 The Case of the de Rham Complex; 4 Fixed Point Theorems in Geometry; 4.1 Some Generalities on Riemannian Manifolds; 4.2 Hadamard Manifolds and Cartan's Theorem; 4.3 Fixed

Point Theorems for Compact Manifolds; 5 Fixed Points of Volume Preserving Maps; 5.1 The Poincare Recurrence Theorem; 5.2 Symplectic Geometry and its Fixed Point Theorems; 5.2.1 Introduction to Symplectic Geometry; 5.2.2 Fixed Points of Symplectomorphisms; 5.2.3 Arnold's Conjecture; 5.3 Poincare's Last Geometric Theorem 5.4 Automorphisms of Lie Algebras 5.5 Hyperbolic Automorphisms of a Manifold; 5.5.1 The Case of a Torus; 5.5.2 Anosov Diffeomorphisms; 5.5.3 Nilmanifold Examples of Anosov Diffeomorphisms; 5.6 The Lefschetz Zeta Function; 6 Borel's Fixed Point Theorem in Algebraic Groups; 6.1 Complete Varieties and Borel's Theorem; 6.2 The Projective and Grassmann Spaces; 6.3 Projective Varieties; 6.4 Consequences of Borel's Fixed Point Theorem; 6.5 Two Conjugacy Theorems for Real Linear Lie Groups; 7 Miscellaneous Fixed Point Theorems; 7.1 Applications to Number Theory; 7.1.1 The Little Fermat Theorem 7.1.2 Fermat's Two Squares Theorem 7.2 Fixed Points in Group Theory; 7.3 A Fixed Point Theorem in Complex Analysis; 8 A Fixed Point Theorem in Set Theory; Afterword; Bibliography; Index

Sommario/riassunto

This is the only book that deals comprehensively with fixed point theorems overall of mathematics. Their importance is due, as the book demonstrates, to their wide applicability. Beyond the first chapter, each of the other seven can be read independently of the others so the reader has much flexibility to follow his/her own interests. The book is written for graduate students and professional mathematicians and could be of interest to physicists, economists and engineers.
