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Nota di bibliografia	Includes bibliographical references and index.
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 Poincaré-Bendixson theorem -- 4.3 The Poincaré-Bendixson theorem  
 -- 4.4 Applications of the Poincaré-Bendixson theorem -- 4.5 Periodic  
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 Answers and hints to the exercises -- References.

## Sommario/riassunto

On the subject of differential equations many elementary books have  
 been written. This book bridges the gap between elementary courses  
 and research literature. The basic concepts necessary to study  
 differential equations - critical points and equilibrium, periodic  
 solutions, invariant sets and invariant manifolds - are discussed first.  
 Stability theory is then developed starting with linearisation methods  
 going back to Lyapunov and Poincaré. In the last four chapters more

advanced topics like relaxation oscillations, bifurcation theory, chaos in mappings and differential equations, Hamiltonian systems are introduced, leading up to the frontiers of current research: thus the reader can start to work on open research problems, after studying this book. This new edition contains an extensive analysis of fractal sets with dynamical aspects like the correlation- and information dimension. In Hamiltonian systems, topics like Birkhoff normal forms and the Poincaré-Birkhoff theorem on periodic solutions have been added. There are now 6 appendices with new material on invariant manifolds, bifurcation of strongly nonlinear self-excited systems and normal forms of Hamiltonian systems. The subject material is presented from both the qualitative and the quantitative point of view, and is illustrated by many examples.

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