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Nota di contenuto	Front Cover; The Finite Element Method for Fluid Dynamics; Copyright Page; Contents; Preface; Acknowledgements; Chapter 1. Introduction to the equations of fluid dynamics and the finite element approximation; 1.1 General remarks and classification of fluid dynamics problems discussed in this book; 1.2 The governing equations of fluid dynamics; 1.3 Inviscid, incompressible flow; 1.4 Incompressible (or nearly incompressible) flows; 1.5 Numerical solutions: weak forms, weighted residual and finite element approximation; 1.6 Concluding remarks; References Chapter 2. Convection dominated problems- finite element approximations to the convection-diffusion-reaction equation2.1 Introduction; 2.2 The steady-state problem in one dimension; 2.3 The steady-state problem in two (or three) dimensions; 2.4 Steady state - concluding remarks; 2.5 Transients - introductory remarks; 2.6 Characteristic-based methods; 2.7 Taylor-Galerkin procedures for scalar variables; 2.8 Steady-state condition; 2.9 Non-linear waves and shocks; 2.10 Treatment of pure convection; 2.11 Boundary conditions

for convection-diffusion; 2.12 Summary and concluding remarks
References
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general procedure for compressible and incompressible flow; 3.1
Introduction; 3.2 Non-dimensional form of the governing equations;
3.3 Characteristic-based split (CBS) algorithm; 3.4 Explicit, semi-
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restrictions; 3.7 A single-step version; 3.8 Boundary conditions; 3.9
The performance of two-step and one-step algorithms on an inviscid
problem; 3.10 Concluding remarks; References
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incompressible flows; 4.3 Adaptive mesh refinement; 4.4 Adaptive
mesh generation for transient problems; 4.5 Slow flows - mixed and
penalty formulations; 4.6 Concluding remarks; References; Chapter 5.
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Concluding remarks; References
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References; Chapter 7. Compressible high-speed gas flow; 7.1
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examples in steady state
7.10 Transient two- and three-dimensional problems

Sommario/riassunto

The sixth editions of these seminal books deliver the most up to date and comprehensive reference yet on the finite element method for all engineers and mathematicians. Renowned for their scope, range and authority, the new editions have been significantly developed in terms of both contents and scope. Each book is now complete in its own right and provides self-contained reference; used together they provide a formidable resource covering the theory and the application of the universally used FEM. Written by the leading professors in their fields, the three books cover the basis of the method
