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energy principle; 3.4 FEM procedure; 3.4.1 Domain discretization; 3.4.2 Displacement interpolation; 3.4.3 Standard procedure for constructing shape functions; 3.4.3.1 On the inverse of the moment matrix; 3.4.3.2 On the compatibility of the shape functions
3.4.3.3 On other means of construct shape functions3.4.4 Properties of the shape functions; 3.4.5 Formulation of finite element equations in local coordinate system; 3.4.6 Coordinate transformation; 3.4.7 Assembly of global FE equation; 3.4.8 Imposition of displacement constraints; 3.4.9 Solving the global FE equation; 3.5 Static analysis; 3.6 Analysis of free vibration (eigenvalue analysis); 3.7 Transient response; 3.7.1 Central difference algorithm; 3.7.2 Newmark's method (Newmark, 1959); 3.8 Remarks; 3.8.1 Summary of shape function properties
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4.3.1.2 Convergence property of the FEM

Sommario/riassunto

Written for practicing engineers and students alike, this book emphasizes the role of finite element modeling and simulation in the engineering design process. It provides the necessary theories and techniques of the FEM in a concise and easy-to-understand format and applies the techniques to civil, mechanical, and aerospace problems. Updated throughout for current developments in FEM and FEM software, the book also includes case studies, diagrams, illustrations, and tables to help demonstrate the material. Plentiful diagrams, illustrations and tables demonstrate the mat