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Specification; 4.5. The Cambered Thin Airfoil; 4.6. Aerodynamics of The Thin Airfoil; 4.7. The Lumped-Vortex Method; 4.8. Panel Methods; 4.8.1. Program Panel; 4.9. Complex-Variables Methods; 4.10. References; 4.11. Problems; 4.12. Computer Program; 5. Wings of Finite Span; 5.1. The Vortex System for a Thin Planar Wing of Finite Span; 5.2. The Vortex-Lattice Method; 5.3. Induced Drag; 5.4. Lifting-Line Theory; 5.5. The Elliptic Lift Distribution; 5.6. The Optimal Wing; 5.7. Nonelliptic Lift Distributions; 5.8. References; 5.9. Problems; 5.10. Computer Program; 6. The Navier-Stokes Equations; 6.1. The Stress at a Point; 6.2. Newton's Second Law For Fluids; 6.3. Symmetry of Stresses; 6.4. Molecular View of Stress in a Fluid; 6.5. The No-Slip Condition; 6.6. Unidirectional Flows; 6.7. The Viscosity Coefficient; 6.8. Pascal's Law; 6.9. Strain Versus Rotation; 6.10. Isotropy; 6.11. Vectors and Tensors; 6.12. The Stress Tensor; 6.13. The Rate-of-Strain Tensor; 6.14. The Two Coefficients of Viscosity; 6.15. The Navier-Stokes Equations; 6.16. Problems; 7. The Boundary Layer; 7.1. The Laminar Boundary Layer; 7.2. Use of the Boundary-Layer Equations; 7.2.1. Skin Friction; 7.2.2. Displacement Thickness; 7.2.3. Momentum Thickness; 7.3. The Momentum Integral Equation; 7.4. Velocity Profile Fitting: Laminar Boundary Layers; 7.5. Thwaites's Method For Laminar Boundary Layers; 7.6. Form Drag; 7.7. Turbulent Flows; 7.8. Velocity Profile Fitting: Turbulent Boundary Layers; 7.9. Head's Method For Turbulent Boundary Layers; 7.10. Transition From Laminar to Turbulent Flow; 7.11. Boundary Layer Separation; 7.12. Airfoil Performance Characteristics

Sommario/riassunto

<DIV>This concise and highly readable introduction to theoretical and computational aerodynamics integrates both classical and modern developments, focusing on applying methods to actual wing design. Designed for a junior- or senior-level course and as a resource for practicing engineers, it features 221 figures. </DIV>
