References

The following references are recommended for collateral reading and for further study. The list is by no means complete.

1. M. Abramowitz and I. A. Stegun, *Handbook of Mathematical Functions*. NY: Dover, 1965. Comprehensive collection of formulas, properties, and tables of values of the special functions of mathematical physics.

2. T. M. Apostol, *Mathematical Analysis*. Reading, MA: Addison–Wesley, 1957. An excellent general and rigorous reference for advanced calculus.

3. C. M. Bender and S. A. Orszag, *Advanced Mathematical Methods for Scientists and Engineers*. NY: McGraw–Hill, 1978. Covers more advanced topics, including methods of solution of differential equations with irregular singular points.

4. R. V. Churchill, *Operational Mathematics*, 3rd ed. NY: McGraw–Hill, 1972. A standard reference for the theory and application of the Laplace transform.

5. I. Ekeland, *Mathematics and the Unexpected*. Chicago: University of Chicago Press, 1988. A stimulating historical and mathematical account of the profound shift from the orderly determinism of Newton to an often nondeterministic and chaotic world. This little book forms an excellent sequel to the Kline reference listed below.

6. A. Erdèlyi (ed), *Tables of Integral Transforms*, Vol. 1. NY: McGraw–Hill, 1954. Volume 1 contains a tabulation of Fourier transforms (called "exponential Fourier transforms" therein), Fourier sine and cosine transforms, Laplace transforms, and Mellin transforms.

7. M. D. Greenberg, *Foundations of Applied Mathematics*. Upper Saddle River, NJ: Prentice Hall, 1978. Chapter 10 on the variational calculus discusses the derivation of ordinary and partial differential equations from fundamental extremum principles such as the physical principle of minimum potential energy. Chapter 25 gives an introduction to perturbation methods, Chapter

27 explains the method of characteristics for the numerical solution of hyperbolic PDE's, and Chapter 28 explains the method of Green's functions for solving ODE's and PDE's.

8. E. L. Ince, *Ordinary Differential Equations*. NY: Dover, 1956. Since its first publication in 1926 this has been a classic reference work.

9. D. E. Johnson and J. R. Johnson, *Mathematical Methods in Engineering Physics*. Upper Saddle River, NJ: Prentice Hall, 1982. Includes a readable account of the numerous special functions of mathematical physics.

10. D. W. Jordan and P. Smith, *Nonlinear Ordinary Differential Equations*, 2nd ed. Oxford: Oxford University Press, 1987.

11. M. Kline, *Mathematical Thought from Ancient to Modern Times*. NY: Oxford University Press, 1972. An interesting historical account of the roots of modern mathematics.

12. N. W. McLachlan, *Bessel Functions for Engineers*, 2nd ed. London: Oxford University Press, 1955. Indicates the wide variety of engineering applications of Bessel functions.

13. G. M. Murphy, *Ordinary Differential Equations and Their Solutions*. Princeton, NJ: Van Nostrand, 1960. Contains an extensive compilation of ordinary differential equations and their solutions.

14. H. E. Newell, Jr., *Vector Analysis*. NY: McGraw-Hill, 1955. Chapter 11 contains a 43-page introduction to the application of vector analysis to electromagnetic theory.

15. E. G. Phillips, *Functions of a Complex Variable*. Edinburgh: Oliver & Boyd, 1957. An excellent little book with many worked examples, especially on contour integration.

16. D. L. Powers, *Boundary Value Problems*. NY: Academic Press, 1972. A readable text for a first course in PDE's.

17. E. B. Saff and A. D. Snider, *Fundamentals of Complex Analysis*. Upper Saddle River, NJ: Prentice Hall, 1976.

18. H. Sagan, *Boundary and Eigenvalue Problems in Mathematical Physics*. NY: John Wiley, 1961. Detailed treatment of Sturm–Liouville and differential equation eigenvalue problems.

19. H. M. Schey, *Div, Grad, Curl, and All That*. NY: Norton, 1973.

20. W. G. Strang, *Linear Algebra and Its Applications*, 2nd ed. NY: Academic Press, 1980. Clear, with engaging applications and an introduction to linear programming.

21. S. H. Strogatz, *Nonlinear Dynamics and Chaos*. Reading, MA: Addison–Wesley, 1994. A more detailed development of the material presented here in Chapter 7.

22. E. Zauderer, *Partial Differential Equations of Applied Mathematics*. NY: John Wiley, 1983. This graduate-level text includes nonlinear problems, and perturbation and asymptotic methods, as well as discussion of the method of characteristics for the numerical solution of hyperbolic PDE's.