

ECE 6382 Engineering Analysis I

Suggested Reading Assignments

Reading assignments are selected from the following texts:

- G. B. Arfken, H. J. Weber, and F. E. Harris, *Mathematical Methods for Physicists*, 7th Ed., Academic Press, 2013.
- J. W. Brown and R. V. Churchill, *Complex Variables and Applications*, McGraw-Hill, 8th Ed., 2009.

Topics

- Introduction to Complex Variables: Arfken, Sections 1.8, 11.1. Churchill, Chapter 1. Churchill, Chapter 3, Sections 21-23.
- Complex Differentiation: Arfken, Section 11.2, Churchill, Chapter 2.
- Complex Integration: Arfken, Sections 11.3, 11.4. Churchill, Chapter 4.
- Complex Mappings: Arfken, Section 11.10 (section on Mapping). Churchill, Chapter 3 and Chapter 8, pp. 299–332.
- Conformal Mapping: Churchill, Chapters 9 and 10.
- Branch Cuts: Arfken, pp. 499–503. Churchill, pp. 95–96, pp. 336–340, pp. 347–350.
- Power Series: Arfken, pp. 492–497. Churchill, Chapter 5.
- Analytic Continuation: Arfken, pp. 503–507. Churchill, pp. 83–85.
- Singularities: Arfken, pp. 497–502. Churchill, pp. 229–231, pp. 240–243, pp. 257–260.
- Residue Theorem: Arfken, pp. 509–511. Churchill, pp. 231–239, pp. 244–247, pp. 277–280.
- Integral Evaluation: Arfken, pp. 522–538, pp. 544–546. Churchill, pp. 269–275, pp. 280–285, pp. 288–290.
- Pole-Zero Expansions: Arfken, pp. 515–520.
- Asymptotic Series: Arfken, pp. 577–584.

- Gamma Function: Arfken, pp. 599–605.
- Method of Steepest-Descent: Arken, pp. 585–590.
- Watson’s Lemma: N. Bleistein and R. A. Handelsman, *Asymptotic Expansion of Integrals*, Holt, Rinehart, and Winston, 1975 (reprinted by Dover, 2010).
- Linear Independence and Wronskians: Arfken, pp. 359–360.
- Sturm-Liouville Theory: Arfken, pp. 381–387, p. 398.
- Green’s Functions: Arfken, pp. 447–467.
- Bessel Functions: Arfken, pp. 643–648, pp. 650–653, pp. 661–663, pp. 667–672 pp. 674–675, pp. 680–683.