Supplementary Reading on Complex Calculus:

Complex Analysis, by E. B. Saff and A. D. Snider, 3rd Edition

Analytic functions: Chapter 2, Sections 2.3 & 2.4

Contour Integrals: Chapter 4, Sections 4.1-4.5

Laurent Series & Singularities: Chapter 5, Sections 5.1-5.6

Residue Theorem: Chapter 6, Sections 6.1-6.4 & 6.6