

Please complete the following exercises. You may collaborate with your classmates, consult your notes or text, and/or ask for help, but your write-up of the solutions must be entirely your own words/workings.

While you may also consult outside resources (Wikipedia, for example), you may find those sources often pitched to either a level that is too high or too low. You should not consult solutions manuals, Chegg, and other such sources – these are not resources, textbooks, guidelines, or advice, they are solutions. Copying solutions, from whatever source, will entirely bypass the learning process, and it may also constitute plagiarism. Note that this even includes answers provided by the text. You should not simply copy those answers – you must work through the entire problem and derive the answer.

Problems from the text are given by section (§).

§42 : 2, 3, 4

§43 : 3^b

A1 : Draw (in the complex plane) the contours described by the following:

- (a) The function $\sin(t)$ from $t = 0$ to $t = 8\pi$ and a semicircle, below the real axis, centered at 4π .
- (b) Line segments connecting the five fifth roots of 1 (without crossing).
- (c) Line segments joining the points 0, $1 + i$, $1 - i$, and 3 (in that order).
- (d) Make up your own: Draw and describe it clearly.

§46 : 1, 2, 4, 7

§47 : 1, 2, 4, 5

§49 : 1, 2, 4^b

§53 : 1, 2, 6

§57 : 1, 2, 3, 5^b, 6^p

§59 : 4, 6

^p indicates a problem that is proofs-oriented. This course is not proofs-intensive, so we will not see many of these and they will be relatively simple. However, be sure to approach these problems in the appropriate manner – drawing a specific conclusion by doing just a few small steps, with each step clearly justified by a result, theorem, or formula from the text.

^b indicates a bonus problem. Such a problem will contribute a small extra amount to your grade. Skipping these problems (or completing them incorrectly) will not cause you to lose points. Some of these are proofs-oriented also.