

Math 520 Homework 2

Due Friday, January 31, 2020 by 5 pm

Please remember to write down your name on your assignment.

Exercises in Ahlfors: Solve the following problems:

- Chapter 2 sections 1.2-1.3: read these sections about polynomials and rational functions (p. 28-33). Solve section 1.3 (p. 32-33) problem 1, 4.
- Chapter 1 section 2.4: read this section about the “spherical representation” (p. 18-20) then solve p.20 problem 1.
- Chapter 2 section 2.3 (p.37) problem 4, 6
- Chapter 2 section 2.4 (p.41) problem 3, 6
- Chapter 2 read sections 3.1-3.4, then solve:
 - section 3.3 (p. 44) problem 1, and
 - section 3.4 (p. 47) problems 2, 3, 9. (note for 2: use the definition of π given in the book on p. 45).

Other problems:

1. Prove that if a $f : \mathbb{C} \rightarrow \mathbb{C}$ is complex differentiable, and takes only purely real values, meaning $\text{Im}(f(z)) = 0$ for all z (or alternatively, takes only purely imaginary values), then f is constant.