

Exercises for Week 6

The work handed in should be entirely your own. You can consult Gamelin and/or the class notes but nothing else. To receive full credit, justify your answer in a clear and logical way. Due Mar. 6.

Reading. Read Sections 3.2-3.4 of the textbook carefully (better before you attempt the homework problems).

1. Section III.2 Exercises 3, 4.
2. Section III.3 Exercises 2, 4, 5.
3. Section III.4 Exercises 1, 3.
4. Use rigorous ϵ - δ language to prove the following statement: If $u(z)$ is a continuous function defined on a domain containing the disk $D_r := \{|z - z_0| \leq r\}$, then

$$\lim_{r \rightarrow 0} \frac{1}{2\pi} \int_0^{2\pi} u(z_0 + re^{i\theta}) d\theta = u(z_0).$$