Homework 10

Supplementary Problem 1

Problem 1, write up (d)*, (g)*, on p. 365.
Problem 3, write up (f)*, (j)*, on p. 365.
Problems 5, 6*, and 7* on p. 365.
Supplementary Problem 2*

Supplementary problems

Problem 1. Suppose that the series \( \sum_{n=1}^{\infty} a_n \) converges. Prove that the function series \( \sum_{n=1}^{\infty} a_n e^{-nx} \) converges uniformly on \([0, \infty)\). (This is a harder problem than the one on the test.)

Problem 2. Let \( C := \{ z \in \mathbb{C} \mid |z| = 1 \} \). By \( f[C] \) we denote the pointwise image of \( C \) under \( f \), i.e. the set \( \{ f(z) \mid z \in C \} \). Describe (draw) the set \( f[C] \) for

(a) \( f(z) := (3 + 4i)z \);
(b) \( f(z) := \frac{1}{1-z} \).