Complex Variables, MATH 4337/5337, Fall 2024

Homework 8: Section 2.25. Examples, Section 29. The Exponential Function

(Revised)

Due Saturday, April 6 at 11:59 pm

Write in complete sentences!!! *Explain* what you are doing and convince me that you understand what you are doing and why. Justify all steps by quoting relevant results from the textbook or hypotheses. The exercise numbers are based on the 9th edition of the textbook.

2.26.7. Let a function f be analytic everywhere in a domain D. Prove that if $f(z)$ is real-valued for all z in D, then $f(z)$ must be constant throughout D.

3.30.7. Prove that $|\exp(-2z)| < 1$ if and only if $\mathrm{Re}(z) > 0$.

3.30.8. Find all values of z which satisfy the given equation.

(a) $e^z = -2$.

(c) $\exp(2z - 1) = 1$.