

# COMPLEX ANALYSIS, HW # 4

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Chapter 7, problems 10, 11, 12, 17, 19, 23, and this problem:

## Problem 1.

Let  $u(z)$  be harmonic in  $D =: D(0, 1) \setminus \{0\}$  such that

$$\lim_{z \rightarrow 0} \frac{u(z)}{\log |z|} = 0.$$

Prove that  $u$  can be extended to be harmonic in  $D(0, 1)$ .