

# COMPLEX ANALYSIS MATH 220B

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## HW# 7

Chapter 7, problems 45, 51, 52, 65, and the following problems:

### Problem 1.

Is the function  $u(z) = \frac{1}{(1+|z|^2)^2}$  subharmonic in  $\mathbb{C}$ ? in  $D(0, 1)$ ? in  $D(10, 1)$ ?

### Problem 2.

Let  $h(z)$  be a  $C^2$  function in a neighborhood of the closed unit disc. Prove that inside the unit disc  $h$  can be represented as a difference of two subharmonic functions.

### Problem 3.

Let  $K \subset \mathbb{C}$  be a compact set. Prove that  $u(z) = -\log(\text{dist}(z, K))$  is a subharmonic function in  $\mathbb{C} \setminus K$ .