

MATH 467, HOMEWORK #2, DUE MONDAY, FEBRUARY 4

ALEX IOSEVICH

Please print out the questions, type your name neatly on the questions page and staple it carefully to your homework solutions. Please do not write more than one solutions on a page unless you are typing in TeX.

Problems 1,2,9,10,11,13 and 17 on pages 43-44 and also the following.

Problem: Let $f = u + iv$ be differentiable in an open connected set Ω , and assume that the real and imaginary parts of f are related by

$$au(x, y) + bv(x, y) + c = 0,$$

where a, b, c are real and $a^2 + b^2 \neq 0$. Find f .

Problem: Assume that the function $f(z)$ admits a derivative at the point z_0 . Show that

$$\frac{\partial f}{\partial \bar{z}}|_{z=z_0} = 0,$$

where

$$\frac{\partial f}{\partial \bar{z}} = \frac{1}{2} \left(\frac{\partial f}{\partial x} + i \frac{\partial f}{\partial y} \right).$$