

Homework 3
Due 6/30/05

Problems 1-4: III.9.7, IV.3.2, IV.6.3 (hint: try finding first-order differential equations satisfied by $f + f'$ and $f - f'$; you may not use any theorems about differential equations at all!), IV.8.1.

Problem 5: Is it true that $\log(i^2) = 2\log(i)$?

Problem 6: (a) Show that $f: G \rightarrow \mathbb{C}$ is continuous if and only if it has the following property: if $\lim_{n \rightarrow \infty} z_n = L$, then $\lim_{n \rightarrow \infty} f(z_n) = f(L)$.

(b) Suppose that $f: \mathbb{C} \rightarrow \mathbb{C}$ is a continuous function and $f(z) = f(2z)$ for all $z \in \mathbb{C}$. Show that f is constant.