

Math 418

Homework 11

Due April 26 ,2001

C20. Let $|z_0| < 1$. Prove that, if f is a conformal mapping f of the unit disk $D = \{|z| < 1\}$ onto D such that $f(z_0) = z_0$ and $f'(z_0) > 0$, then $f(z) = z$ for all $z \in D$.

Hint. Use that every conformal mapping from D onto D has the form

$$(0.1) \quad f(z) = \beta \frac{z - \alpha}{\bar{\alpha}z - 1}$$

where $|\beta| = 1, |\alpha| < 1$.

C21. Let $|z_0| < 1$. Find a bilinear transformation of the form (??) such that $f(z_0) = 0$ and $f'(z_0) > 0$.

Problems in Levinson and Redheffer, Chapter 6: 1,2, Section 1; 2,5, Section 2.
Read Chapter 6, Sections 1,2 and 3.