

Homework 3

Due Tuesday July 30

Chapter 3 Problems: 3.30; 3.31(b); 3.33; 3.34 (the ones not covered in class); 3.35 (the ones not covered in class, aka the second column) 3.37; 3.40 (Find the principle values means using the definition of the Logarithm in class); 3.41(cdef, any logarithm taken should be the principle logarithm.) 3.44(bd) (Be as lazy as possible in b; try the Cauchy-Riemann equations for d); 3.53 (parts abc) (For part c, it is never a bad idea to test the boundary of the region and fill in like we have in class).

Additional Problems

1. Let

$$f(z) = \frac{az + b}{cz + d}$$

be a Mobius transformation. Let z_1, z_2, z_3 be distinct points in \mathbb{C} . Prove that $[z, z_1, z_2, z_3] = [f(z), f(z_1), f(z_2), f(z_3)]$. Put succinctly, the cross ratio is invariant under Mobius transformations.