

CONFORMAL STRUCTURES, CONFORMAL METRICS AND CONFORMAL INVARIANTS

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Building only upon a modest basis of complex analysis, we develop some theory of fundamental mathematical structures and see how manipulating those yield some well-known theorems in holomorphic dynamics in one variable. We start out looking at complex structures and notice they are the same as conformal structures in one dimension, and conformal orientation preserving maps are the same as holomorphic maps. We investigate the relation between metric and conformal structure and see how the hyperbolic metric arise naturally. We show example of the uses of this in dynamics. Then we turn our attention to extremal length with our prime example being the modulus of an annulus. We derive some inequalities and again apply the theory to holomorphic dynamics.