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David A Singer* (das5@po.cwru.edu), Department of Mathematics, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, OH 44106-7058. *Diffeomorphisms of the Circle and Hyperbolic Curvature.*

The trace Tf of a smooth function f of a real or complex variable is defined and shown to be invariant under conjugation by Möbius transformations. We associate with a convex curve of class C^2 in the unit disk with the Poincaré metric a diffeomorphism of the circle and show that the trace of the diffeomorphism is the twice the reciprocal of the geodesic curvature of the curve. Then applying a theorem of Ghys on Schwarzian derivatives we give a new proof of the four-vertex theorem in the hyperbolic plane. (Received January 08, 2001)