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**Biao Brian Ou\*** (bou@math.utoledo.edu), Department of Mathematics and Statistics,  
University of Toledo, Toledo, OH 43606. *An equality for the geodesic curvature of certain curves on  
a two-dimensional Riemannian surface.*

We prove an equality for the geodesic curvature function of certain closed curves in a local domain of a two-dimensional Riemannian surface. We address its connection to the local Gauss-Bonnet theorem. We also show that the equality leads to a four-vertex theorem for simple and closed curves on a two-dimensional Riemannian surface with a constant Gauss curvature. (Received January 09, 2015)