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Yoonjin Lee* (yoonjin1@ewha.ac.kr), Department of Mathematics, Ewha Womans University, 11-1 Daehyun-Dong, Seodaemun-Gu, Seoul, 120-750, South Korea. *The Reflection Theorem for class groups of global function fields and its applications.*

We present the Reflection Theorem for divisor or ideal class groups of global function fields. In detail, let K be a global function field with constant field F_q , L_1 a quadratic geometric extension of K and L_2 its twist by the quadratic constant field extension of K . We show that for every odd integer m dividing $q + 1$, the divisor class groups of L_1 and L_2 have the same m -rank, while their m -ranks of ideal class groups are equal or differ by 1. We then discuss its applications to other related results. We also present complete descriptions for relative quadratic function fields whose class numbers are divisible by 3. (Received September 03, 2009)