1064-37-267   **Steven Broad*** (`sbroad@saintmarys.edu`), 343 Madeleva Hall, Saint Mary's College, Notre Dame, IN 46556. *Index formulas for Loewner vector fields.*

We prove a geometric index formula which produces a "defect" term for a conjecture of Charles Loewner about the index of vector fields of the form $\partial_{\bar{z}}^n f$ with isolated zeros for functions $f : \mathbb{C} \to \mathbb{R}$. A recent result of F. Xavier allows the index of such vector fields to be computed in terms of the set of eigenvalues of the Hessian of f in the case $n = 2$. Our result extends this formula to all $n \geq 2$. The Loewner conjecture has a deep connection to the Carathéodory conjecture which states that a smooth, convex embedding of the 2-sphere into $\mathbb{R}$ has at least two umbilics. (Received September 12, 2010)