sense-preserving mapping

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A continuous mapping which preserves the orientation of a Jordan curve is called sense-preserving or orientation-preserving. If on the other hand a mapping reverses the orientation, it is called sense-reversing.

If the mapping is furthermore differentiable then the above statement is equivalent to saying that the Jacobian is strictly positive at every point of the domain.

An example of sense-preserving mapping is any conformal mapping $f : \mathbb{C} \to \mathbb{C}$. If you however look at the mapping $g(z) := f(\bar{z})$, then that is a sense-reversing mapping. In general if $f : \mathbb{C} \to \mathbb{C}$ is a smooth mapping then the Jacobian in fact is defined as $J = |f_z| - |f_{\bar{z}}|$, and so a mapping is sense preserving if the modulus of the partial derivative with respect to z is strictly greater then the modulus of the partial derivative with respect to $\bar{z}$.

This does not that this notion is to the complex plane. For example $f : \mathbb{R} \to \mathbb{R}$ defined by $f(x) = 2x$ is a sense preserving mapping, while $f(x) = x^2$ is sense preserving only on the interval $(0, \infty)$.