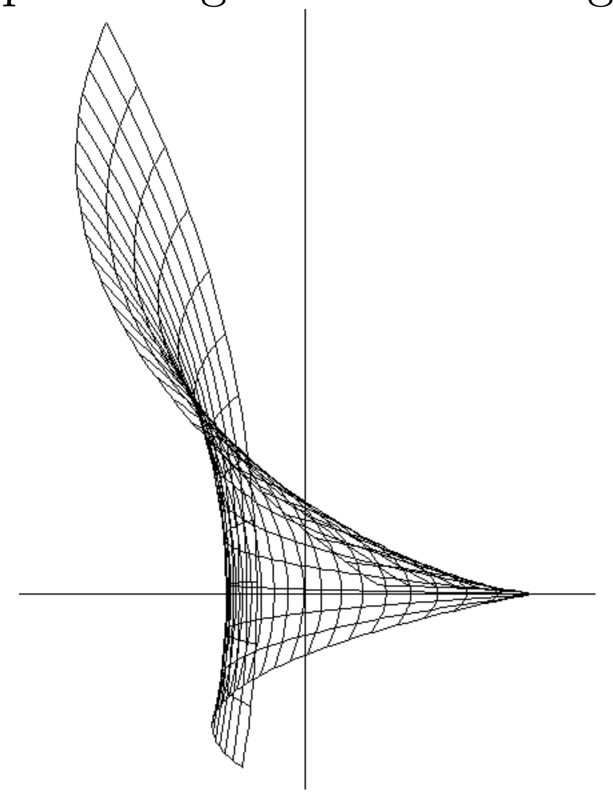
Nonconformal Complex Map $z \mapsto \mathrm{conj}(z) + aa \cdot z^2$ *

Look first at other functions and their ATOs, for example $z \to z^2$ and exp. The default `Morph` varies $aa \in [0, 1]$. The map $z \mapsto \mathrm{conj}(z) + aa \cdot z^2$ is a map from the complex plane to itself. The harmless looking "conj" is responsible for the fact that this map is not complex differentiable and therefore not a "conformal" map, that is, a map for which the angles between any two curves and their images are the same. It is clearly visible in the image that the squares of the domain grid are mapped to rectangles and even to parallelograms in the range.



The image also shows two "fold lines". We observe that interior points of the domain are mapped so that they lie on the boundary of the image. For a complex differentiable function this can never happen as is asserted by the *Open Mapping Theorem.* See the default morph.

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* This file is from the 3D-XplorMath project. Please see:

http://3D-XplorMath.org/