

Advanced Topics in Geometry F1 (MTH.B506)

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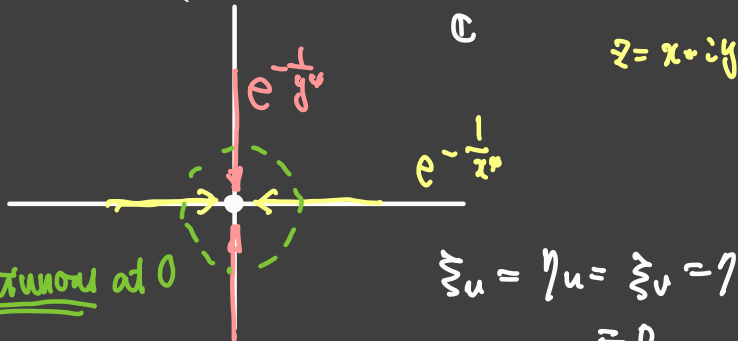
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Comment (C') Cauchy-Riemann \leftrightarrow holomorphic

A counterexample which satisfies Cauchy-Riemann equation but is not holomorphic:

$$\xi + i\eta = f(z) = \begin{cases} \exp(-1/z^4) & (z \neq \mathbb{C} \setminus \{0\}) \\ 0 & (z = 0) \end{cases}$$

0 : essential sing



discontinuous at 0

$$\xi_u = \eta_u = \xi_v = \eta_v = 0$$

satisfies C-R at 0 at (0,0)