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The Pull-back Conjecture - two interesting results

Opis: Our goal is to discuss two interesting "side quests" regarding the Pull-back Conjecture.

First of all, we will present the global algebraic case of the conjecture. The answer turns out to be positive, provided that the pull-back is not contained in the zeroes of the Jacobian. A short reminder about local degrees and multiplicities of maps and intersections will be needed. Then we will cite two major theorems, leading to the final result.

Secondly, we will focus on the special case when the singular part of our set is "sufficiently large", i.e. of dimension less by one than the dimension of the whole set. The answer is again positive. We will briefly recall the proof of the Reduction Theorem by Giraldo and Roeder, including only some necessary details. In our case a similar reduction is possible, leading to the case of a curve with an isolated singularity. It remains to show that intersecting a singular set with a hyperplane almost always preserves the singularity at the origin.