

CAAG Project

Summer 2017

Consider an irreducible curve \mathcal{C} in the affine plane over \mathbb{C} . Let $f(x, y) = 0$ ($f \in \mathbb{Q}[x, y]$) be the defining equation for \mathcal{C} , and let n be the (total) degree of f .

- Determine the singularities of \mathcal{C} together with their multiplicities.
- If all the singularities of \mathcal{C} are ordinary, determine the genus of \mathcal{C} .
- If \mathcal{C} has an $(n - 1)$ -fold point, determine a rational parametrization of \mathcal{C} .

Create a program in a computer algebra system (Mathematica, Maple, ...), and write a paper (of approximately 4 pages) describing your solution and your program. Check your program on several examples.

Project presentation: 20 June 2017