

COMPUTATIONAL ALGEBRAIC GEOMETRY II

MATS BOIJ

HOMEWORK 1

As seen in the chapter “Teaching the Geometry of Schemes”, we can find the equation defining the locus of singular cubics in the \mathbb{P}^9 parametrizing all plane cubic curves. This locus has codimension one and is defined by a single polynomial of degree 12 with 2040 terms. With a natural multigrading on the coordinates, this polynomial is homogeneous of degree $(-12, -12, -12)$.

The homework problem for next week is to find the equations defining the closure of the locus of reducible cubics. This is a subvariety of codimension two and it is a subvariety of the hypersurface containing all singular cubics.

The homework should be handed in at the next meeting, February 3.