

Homework exercises for lecture #3

TO BE HANDED IN ON FEB 17.

1. Consider the nodal cubic curve $C = \{y^2z = x^3 + x^2z\} \hookrightarrow \mathbb{P}^2$. Show that there exists a non-trivial finite étale covering $C' \rightarrow C$ of degree two.
2. Let X and Y be non-singular varieties over an algebraically closed field k . Let $f: X \rightarrow Y$ be a morphism. Show that f is étale at a closed point x if and only if f induces an isomorphism of tangent spaces $T_{X,x} \rightarrow T_{Y,f(x)}$.