Commutative Algebra & Algebraic Geometry
SS 2010

(30) Determine the singular points and the tangents at these singular points to 2 of the curves in Example 7.1.3.

(31) Prove Euler's formula for homogeneous polynomials $F(x_1, x_2, x_3)$:

$$\sum_{i=1}^{3} x_i \cdot \frac{\partial F}{\partial x_i} \;=\; n \cdot F \;, \quad \text{where } n = \deg(F).$$

(32) Determine an irreducible cubic curve in $\mathbb{A}(\mathbb{C})$ having a double point at $(1,1)$ and a regular point at $(0,0)$.