Due Date: 17 Nov
Commutative Algebra: Fall 2023
Exercise sheet 8

Problem 1. Using Krull's principal ideal theorem, prove Krull's height theorem. That is, show that for a Noetherian ring R, every minimal prime $\mathfrak{p}$ over an ideal $(a_1, \ldots, a_n)$ has height at most n.

Problem 2. Gathmann exercise 11.16.

Problem 3. Gathmann exercise 11.22

Problem 4. Gathmann exercise 11.33. Note that the dimension of a variety is the dimension of the coordinate ring. The coordinate ring of a product is the tensor product of the coordinate rings over the base field.