HW 7: Elliptische Kurven I

- Hand in by June 7th 2016.

Exercise 1. Prove or disprove:

1. A quasi-projective variety is quasi-compact.

2. The topological space $\mathbb{P}^n$ is irreducible.

3. If X and Y are irreducible affine varieties, then the affine variety $X \times Y$ is irreducible.

4. Let $f : X \to Y$ be a morphism of irreducible affine varieties. The morphism of k-algebras $f^* : \mathcal{O}(Y) \to \mathcal{O}(X)$ is injective if and only if f is surjective.