Exercises 8

1. (Functor of points)

   (a)

2. * For topological space X, show that X is proper (i.e. $X \times Y \to Y$ is closed for any Y) iff X is compact. (More generally, for proper map $f : X \to Y$, for $y \in Y$, we have the fibre $f^{-1}(y)$ is compact)

3. * Recall the fact that holomorphic functions on compact Riemann surfaces are constant. Let k be an algebraically closed field, and let X be a connected reduced proper k-scheme. Then $\mathcal{O}_X(X) = k$.

[1]find also these exercises on https://github.com/iamcxds/AG-exercise, you can skip a question with * if it is difficult.