1.) Show that for $X = \mathsf{MSpec}\, R$ we have a bijection $\mathcal{O}(X) \simeq R$.

2.) (a) Show that Zariski open subsets of $|X|$ define a topology on X.

(b) For $f \in \mathcal{O}(X)$ we denote by $U(f) \subset X = \mathsf{MSpec}\, \mathcal{O}(X)$ the subset $\{\mathfrak{m} \in X | f \notin \mathfrak{m}\}$. Show that

$$\{U(f) | f \in \mathcal{O}(X)\}$$

defines a basis for the Zariski topology.

Due on Tuesday, September 25th