Theorem 0.1.

$$\Gamma(X, \mathcal{F}) \simeq \mathrm{Hom}(\mathcal{O}_X, \mathcal{F}).$$

Proof. Define the following mapping:

$$\begin{array}{ccc} \mathrm{Hom}(\mathcal{O}_X, \mathcal{F}) & \longrightarrow & \Gamma(X, \mathcal{F}) = \mathcal{F}(X) \\ \cup & & \cup \\ \varphi & \longmapsto & \varphi(1) \end{array} .$$

$$\begin{array}{ccc} \Gamma(X, \mathcal{F}) = \mathcal{F}(X) & \longrightarrow & \mathrm{Hom}(\mathcal{O}_X, \mathcal{F}) \\ \cup & & \cup \\ s & \longmapsto & (f|_U \mapsto f|_U \cdot s|_U). \end{array}$$

These mappings are inverse of each other. □