Exercise 1. Suppose that $X$ and $Z$ are prevarieties, $Y$ is a variety, and $\varphi : X \times Z \to Y \times Z$ is a rational map such that $p_2 \circ \varphi = p_2$. Let $W \subseteq X \times Z$ be a closed subprevariety contained in the domain of definition of $\varphi$, so that $\varphi$ induces a morphism $W \to Y \times Z$.

(a) Show that 
$$\Gamma = \{(x, y, z) \in X \times Y \times Z : (x, z) \in W, \varphi(x, z) = (y, z)\}$$

is a closed subset of $X \times Y \times Z$.

(b) Show that if $X$ is complete, $\varphi(W)$ is closed in $Y \times Z$.

Exercise 2. (a) If $X$ is an affine complex variety, and $U \subseteq X$ is an open subset, a regular function $U \to \mathbb{C}$ gives a continuous map $X_{an}|_U \to \mathbb{C}$, where $\mathbb{C}$ is equipped with the analytic topology.

(b) If also $Y \subseteq \mathbb{A}^m_\mathbb{C}$ is an affine complex variety, and $X \to Y$ is a morphism, then the induced map $X_{an} \to Y_{an}$ is continuous.

Exercise 3. (a) The analytic topology $X_{an}$ on a prevariety $X$ is well defined.

(b) Given another prevariety $Y$ with atlas $\{\psi_i : Y_i \to V_i\}$, and a morphism $\varphi : X \to Y$, the induced map $X_{an} \to Y_{an}$ is continuous.

(c) If $Z \subseteq X$ is a subprevariety, then $Z_{an}$ has the subspace topology inside $X_{an}$.