Date . .

The second assertion will follow once we see in the following section that the product $V \times W$ of two algebraic varieties is again a variety; by Chow's theorem the graph $\Gamma \subset V \times W \subset \mathbb{P}^n$ is then cut out by polynomials.

Γ $V \times W \subset \mathbb{P}^n$ is smooth. $\Rightarrow$ $V \times W$ is a submanifold of $\mathbb{P}^n$

Consider a map $\phi : V \times W \longrightarrow \mathbb{C}$ defined by $\phi(X, Y) = Y - f(X)$

where $f : V \longrightarrow W$ is a holomorphic map.

$\Rightarrow$ Clearly ϕ is holomorphic. $\Rightarrow$ ϕ is meromorphic. $\Rightarrow$ By the fact proved above, ϕ is rational on $\mathbb{P}^n$. $\Rightarrow$ $\phi = \dfrac{h}{g}$ where

h & g are homogeneous of deg. d.

Since $\Gamma = \{ (X, f(X)) \in V \times W \mid X \in V \}$,

$\Gamma = \{ \phi = 0 \} \cap V \times W$. $\Rightarrow \Gamma = \{ h = 0 \} \cap V \times W$.

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This is a nonsense since $\phi(X, Y) = Y - f(X)$ is not well-defined. //

Suppose $V \subset \mathbb{P}^n$. $W \subset \mathbb{P}^m$.
For simplicity, $m = 2$. Let $f : V \longrightarrow W$ be a holomorphic map.