$\Rightarrow \pi^*\left(\frac{F}{G}\right)$ is rational on $\mathbb{P}^n$. $\Rightarrow$ Its restriction to V is rational. ⟧

For the first part, choose a generic $(n-k-1)$-plane $\mathbb{P}^{n-k-1}$ in $\mathbb{P}^n$; at this stage we require only that $\mathbb{P}^{n-k-1}$ be disjoint from V. Let $\mathbb{P}^k$ be a complementary k-plane, and $\pi : V \longrightarrow \mathbb{P}^k$ the projection from $\mathbb{P}^{n-k-1}$. For each point p of $\mathbb{P}^k$, the inverse image $\pi^{-1}(p)$ is just the intersection of V with the $(n-k)$-plane $\overline{\mathbb{P}^{n-k-1}, p}$; since $\overline{\mathbb{P}^{n-k-1}, p}$ will generically intersect V in $d = \deg(V)$ points, π expresses V as a d-sheeted branched cover of $\mathbb{P}^k$ almost everywhere.

⟦ Choose a coordinates $X_0, X_1, \cdots X_n$ on $\mathbb{P}^n$ so that

$$\mathbb{P}^k = (X_{k+1} = X_{k+2} = \cdots = X_n = 0)$$

$$\mathbb{P}^{n-k-1} = (X_0 = X_1 = \cdots = X_k = 0)$$

and $\pi([X_0, \cdots X_n]) = [X_0, X_1, \cdots X_k]$

$\pi : \mathbb{P}^n \longrightarrow \mathbb{P}^k$.

For each point $p \in \mathbb{P}^k$, $\pi^{-1}(p) \ni x$.

$\Rightarrow x = [(x_0, x_1, \cdots x_n)]$. $\Rightarrow \pi(x) = [x_0, x_1, \cdots x_k]$

$= p = [p_0, p_1 \cdots p_k]$

$\Rightarrow x = [p_0, p_1, \cdots p_k, x_{k+1}, \cdots x_n] = [p_0, p_1 \cdots p_k\ 0 \cdots 0]$

$+ [0 \cdots 0, x_{k+1}, \cdots x_n]$

Since $[(0 \cdots 0, x_{k+1}, \cdots x_n)] \in \mathbb{P}^{n-k-1}$,

$x \in \overline{\mathbb{P}^{n-k-1}, p}$. $\Rightarrow$ If we restrict π to