H, and so we can write

$$\varphi(H_i) = (\, a_{1,i} x_1 + \cdots + a_{n,i} x_n + a_{0,i} = 0 \,).$$

⌈ Since φ is automorphism, φ is one to one & onto.
$\Rightarrow$ φ must carry H_i's into hyperplanes other than H. ⌋

The pull back $\varphi^*(x_i)$ of the Euclidean coordinate x_i is then a meromorphic function on $\mathbb{P}^n$ with a simple pole along H and a zero $\varphi(H_i)$; it follows that the function

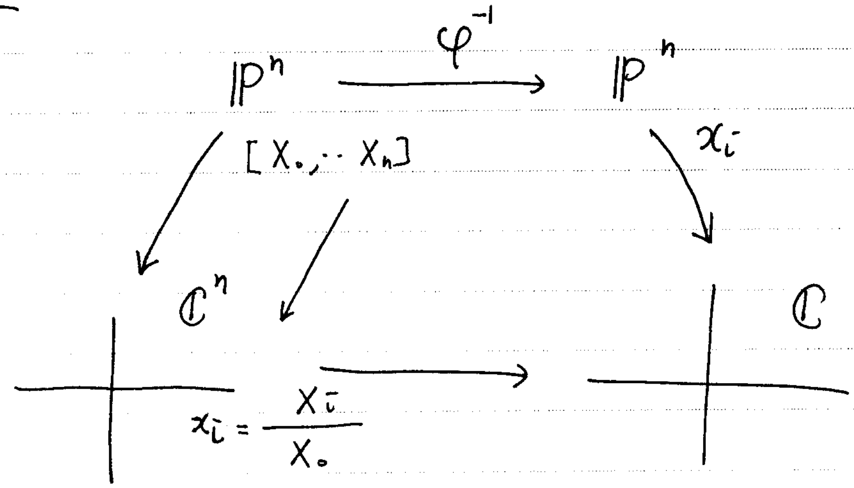
$$\frac{\varphi^*(x_i)}{a_0 + a_1 x_1 + \cdots + a_n x_n}$$

is holomorphic on all of $\mathbb{P}^n$, hence constant. Thus

$$\varphi^*(x_i) = a'_{0,i} + a'_{1,i} x_1 + \cdots + a'_{n,i} x_n,$$

and so φ is linear.

⌈



$\Rightarrow$ $(\varphi^{-1})^*(x_i)$ is a meromorphic function on $\mathbb{P}^n$ with a simple pole along H and a zero along $\varphi(H_i)$, since