gree d_i. The most general meromorphic n-form on $\mathbb{P}^n$ with polar divisor $D = D_1 + \cdots D_n$ has in $\mathbb{C}^n$ an expression

$$\omega = \frac{g(x)\, dx_1 \wedge \cdots \wedge dx_n}{f_1(x) \cdots f_n(x)}$$

where $g(x)$ is a polynomial. Under a typical change of coordinates in $\mathbb{P}^n$

$$x_1 = \frac{1}{x_1'}, \quad x_2 = \frac{x_2'}{x_1'}, \quad \cdots \quad x_n = \frac{x_n'}{x_1'},$$

we have

$$dx_1 \wedge \cdots \wedge dx_n = -\frac{1}{(x_1')^{n+1}}\, dx_1' \wedge dx_2' \wedge \cdots \wedge dx_n',$$

$$f_i(x_1, \cdots x_n) = \frac{1}{(x_1')^{d_i}}\, f_i'(x_1', x_2', \cdots x_n').$$

Pf $\quad dx_1 \wedge \cdots \wedge dx_n = d\left(\frac{1}{x_1'}\right) \wedge d\left(\frac{x_2'}{x_1'}\right) \wedge \cdots \wedge d\left(\frac{x_n'}{x_1'}\right)$

$$= -\left(\frac{1}{x_1'}\right)^2 dx_1' \wedge \frac{x_1' dx_2' - x_2' dx_1'}{x_1'^2} \wedge \cdots \wedge \frac{x_1' dx_n' - x_n' dx_1'}{x_1'^2}$$

$$= -\frac{1}{x_1'^2} \frac{1}{x_1'} \cdots \frac{1}{x_1'}\, dx_1' \wedge dx_2' \wedge \cdots \wedge dx_n'$$

$$= -\frac{1}{(x_1')^{n+1}}\, dx_1' \wedge dx_2' \wedge \cdots \wedge dx_n'$$

$f_i(x_1, \cdots x_n) = F_i(1, x_1, \cdots x_n) = \frac{1}{X_0^d} F_i(X_0, \cdots X_n)$, $\quad x_i = \frac{X_i}{X_0}$

$= \frac{1}{X_0^d} X_1^d F_i\left(\frac{X_0}{X_1}, 1, X_2/X_1, \cdots X_n/X_1\right) = \left(\frac{X_1}{X_0}\right)^d F_i\left(\frac{X_0}{X_1}, 1, \frac{X_2}{X_1}, \cdots X_n/X_1\right) = \frac{1}{(x_1')^{d_i}} f_i'(x_1', x_2', \cdots x_n')$, where $x_1' = \frac{X_0}{X_1}, \cdots$

$F_i(x_1', 1, x_2', \cdots x_n') = f_i'(x_1', x_2', \cdots x_n')$