⌈ By P672 − P1 = P671, ω will not have the line (the hyperplane $= \{[(0, X_1, X_2)]\}$) at infinity as a component of its polar divisor provided that $\deg(p) \le mn - 2 = \deg(f)^m + \deg(x) - (2+1) = mn + 1 - 3 = mn - 2$. ⌋
"For affine, see P166."

In case $m = 2$, the restriction $\deg(p) \le 2n-2$ suggests taking p to be of the form $p(x,y) = \alpha f_{xx} f + \beta f_{xy} f + \gamma f_{yy} f + \delta f_x^2 + \varepsilon f_x f_y + \kappa f_y^2$.

⌈ $\deg f_{xx} = n-2$. $\deg f = n$. $\deg(f_{xy}) = \deg(f_{yy}) = \deg f_{yy} = n-2$ Jacobi relation.
$\deg f_x = n-1 = \deg f_y$ ⇒ By looking at the relation & (∗) on P671, we may guess $p(x,y) = \alpha f_{xx} f + \beta f_{xy} f + \gamma f_{yy} f + \delta f_x^2 + \varepsilon f_x f_y + \kappa f_y^2$. ⌋

To see what p to choose, we assume that the origin is one of the points of intersection and will prove the

Lemma.

$$\mathrm{Res}_{\{0\}}\left(\frac{p(x,y)\, dx \wedge dy}{x\, f(x,y)^2}\right) = \frac{p_y}{f_y^2} - \frac{p f_{yy}}{f_y^3}.$$

Proof of Lemma. This is an application of the transformation formula from Section 2. We may assume that $f(x,y)$ has a Taylor series

$$f(x,y) = ax + by + \frac{cx^2}{2} + dxy + \frac{ey^2}{2} + \cdots, \quad b \ne 0.$$

⌈ Since the n points of intersection of C with L