irreducible, g divides f_1 ($\because$ $\deg g > \deg(\frac{\partial g}{\partial z_n})$).

$\Rightarrow$ $f = g_1^2 f$.

$\Rightarrow \exists$ g s.t $g = \alpha f + \beta \frac{\partial f}{\partial z_n}$, $g \neq 0 \in \mathcal{O}_{n-1}$.

If g, α & β are not relatively prime, divide g, α & β by the greatest common divisor so that we may assume that g, α & β are relatively prime. By the assertion 2 (on P13),

$$\pi(\{ f = \frac{\partial f}{\partial z_n} = 0 \}) = \{ g = 0 \}.$$

Since $\{ f = \frac{\partial f}{\partial z_n} = 0 \}$ is the set of all (z', z_n) s.t $\exists$ at least one (z', z_n') s.t $z_n' \neq z_n$.

$f(z', z_n) = f(z', z_n') = 0$, i.e., $\{ g = 0 \}$ is

the set of all z' s.t $f(z', z_n) = 0$ has a double root, for Δ some polydisc around p and Δ' a polydisc in $\mathbb{C}^{n-1}$, $\pi : V_i \cap (\Delta - (g=0)) \longrightarrow \Delta' - (g=0)$ is a covering map. //

Let $\{ \omega_\nu(z') \}$ denote the z_n- coordinates of the points in $\pi^{-1}(z')$ for $z' = (z_1, \cdots z_{n-1}) \in \Delta' - (g=0)$. and let $\sigma_1(z'), \cdots \sigma_k(z')$ denote the elementary symmetric functions of the ω_ν. The functions σ_i are well-defined and bounded on $\Delta' - (g=0)$, and so extend to Δ'; the function

$$f_i(z) = z_n^k + \sigma_1(z') z_n^{k-1} + \cdots + \sigma_k(z')$$