



Notice that $(f=0)$ does not intersect with $\{ |z_n| = \epsilon, \|z'\| < \delta \}$ for small enough δ and for a proper $\epsilon > 0$.

\Rightarrow The set of all lines through the origin are open set in $G(1, n)$ which do not lie in $(f=0)$.

\Rightarrow Given $V = \{ f_1 = \dots = f_k = 0 \}$, since f_i 's are finite, we may assume that $(f_1=0), \dots$ & $(f_k=0)$ do not contain a ^{common} line through the origin.

$$k = 4, \quad V = \{ f_1 = f_2 = f_3 = f_4 \}.$$

Suppose f_1, \dots & f_4 are relatively prime and any three of them are not relatively prime (otherwise ^{say f_1, f_2, f_3} since $V = \{ f_1 = \dots = f_4 \} \subset \{ f_1 = f_2 = f_3 = 0 \} \subset$ the common locus of relatively prime functions, by the previous argument.) $\Rightarrow f_1 = h g_1, f_2 = h g_2, h g_3 = f_3$ where g_1, g_2 & g_3 are relatively prime. \Rightarrow By the previous argument, we have two relatively prime functions g_1' & g_2' s.t. $\{ g_1' = 0 = g_2' \} \supset \{ g_1 = g_2 = g_3 = 0 \}$.

$$\Rightarrow \{ f_1 = f_2 = f_3 = 0 \} = \{ h = 0 \} \cup \{ g_1 = g_2 = g_3 = 0 \} \\ \subset \{ h = 0 \} \cup \{ g_1' = g_2' = 0 \} = \{ h g_1' = h g_2' = 0 \}$$

where $g_2' = g_3, g_1' \in \mathcal{O}_{n-1}$.

\Rightarrow Again g_1', g_3 & f_4 are relatively prime.

\Rightarrow We have two relatively prime functions s.t. the common locus of the two contains the V .