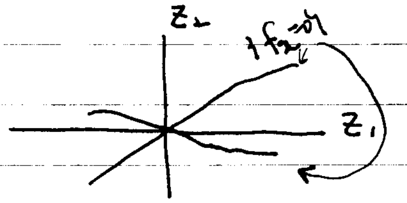
$\subset \cdots \quad \subset \{z_1^{k_1}, f_2, \cdots f_n\} \subset \overset{I_1}{\overset{\shortparallel}{\{f_1 \cdots f_n\}}}.$

$\Rightarrow$ By the lemma, Res_{I_n} nondegenerate $\Rightarrow$ $Res_{I_{n-1}}$ nondegenerate $\cdots$ $\Rightarrow$ $Res_{I_1} = Res_f$ nondegenerate.

For example, $n=2$. Suppose $\{f_1, f_2\}$ with $\{f_1=0\} \cap \{f_2=0\} = \{0\}$. Suppose $\{f_2=0\} \cap \{z_1=0\} = \{0\}$.
Assume that f_2 is a Weierstrass polynomial in z_2.



$\Rightarrow$ Clearly $\{f_2=0\} \cap \{\underset{\text{}}{\overset{z_2\text{-axis}}{\overset{\shortparallel}{z_1=0}}}\} = \{0\}$.

For example, $n=3$. Suppose $\{f_1=0\} \cap \{f_2=0\} \cap \{f_3=0\} = \{0\}$. Since $\{f_1=f_2=0\}$ has codimension 2, $\exists$ a complex line which meets with $\{f_1=f_2=0\}$ at only the origin.
$\Rightarrow$ The line ω can be expressed as $a_1\frac{\partial}{\partial z_1} + a_2\frac{\partial}{\partial z_2} + a_3\frac{\partial}{\partial z_3}$ and $\omega \cap \{f_1=f_2=0\}$. So what can we go ?

Since $\{f_1=f_2=0\}$ has codimension 2, $\exists$ a complex 2-plane which meets with $\{f_1=f_2=0\}$ only at the origin.
$\Rightarrow \exists$ a line orthogonal to the 2-plane, so that the line may be expressed as a linear combination of z_1, z_2 & z_3. Say ω_3. $\Rightarrow \{f_1 = f_2 = \omega_3 = 0\} = \{0\}$. $\Rightarrow$ Consider $\{f_1 = \omega_3 = 0\}$ which has codimension 2.
$\Rightarrow$ By the argument above, $\exists$ ω_2 s.t $\{f_1 = \omega_2 = \omega_3 = 0\}$ and ω_2 & ω_3 are linearly independent. Again by using the above argument, we get a final line ω_1 s.t $\{\omega_1 = \omega_2 = \omega_3 = 0\}$. In general, we can do the same argument.