

$H_p \in I_p(F, G) \Rightarrow$ By the Noether's theorem, $HL = AF + BG$, for some homogeneous polynomials A, B with degree 1. \square

The linear form B vanishes at R_1 and R_2 , and so $B = \beta L$.

If $HL = AF + BG \Rightarrow (HL)(R_1) = (AF)(R_1) + (BG)(R_1)$
 $\Rightarrow 0 = 0 + B(R_1)G(R_1) \Rightarrow$ Since R_1 is not on a curve D , and $G(R_1) \neq 0$, $B(R_1) = 0$. Similarly, we get $B(R_2) = 0 \Rightarrow B$ passes R_1 and R_2 and B is a line. $\Rightarrow B = \beta L$ for some $\beta \in \mathbb{C}$. \square

It follows that L divides AF , and since the line $L=0$ is not a component of C , it follows that $A = \alpha L$. Then $H = \alpha F + \beta G$, and so $\text{Ord}_C(H)_q \geq \text{Ord}_C(G)_q$.

If $HL = AF + BG \Rightarrow HL = AF + \beta LG$
 $\Rightarrow (H - \beta G)L = AF$. $L \cap C =$ Set of finite points
 $\Rightarrow L$ is not a component of $C \Rightarrow L$ does not divide F . $\Rightarrow L$ must divide $A \Rightarrow A = \alpha L$ for some $\alpha \in \mathbb{C}$.
 $\Rightarrow (H - \beta G)L = \alpha L F \Rightarrow H - \beta G = \alpha F$
 $\Rightarrow H = \alpha F + \beta G$.

Restrict H to $C (= (F=0))$, $H|_C = \beta G|_C \Rightarrow \text{Ord}_{C,q} H \geq \text{Ord}_{C,q} (G)$. \square