⌈ Note that the canonical curve is nondegenerate.
If not, $\exists\ a_1, a_2, \cdots a_g$ s.t $a_1 \omega_1(p) + \cdots + a_g \omega_g(p) = 0$ for all p, since $\iota_K(S) \subset H$, H a hyperplane of $\mathbb{P}^{g-1}$.
$\Rightarrow a_1\omega_1 + \cdots + a_g \omega_g = 0 \Rightarrow \{\omega_1 \cdots \omega_g\}$ is linearly dependent $\Rightarrow$ Contradiction.

$\Rightarrow$ Given a hyperplane H in $\mathbb{P}^{g-1}$, $H \cap \iota_K(S)$ is a set of points, which spans the whole hyperplane. If it does not span, we have some other hyperplane H' s.t $\#(H' \cdot \iota_K(S)) > \#(H \cdot \iota_K(S))$ which is impossible.

Note that $H \cap \iota_K(S)$ represents an effective divisor K_S on S, see P177

$$\begin{tikzcd} K_S \arrow[d] & & {[H]} \arrow[d] \\ S \arrow[r, hook, "\iota_K"] & \iota_K(S) \subset & \mathbb{P}^{g-1} \end{tikzcd}$$

$\Rightarrow \iota_K^*[H] = K_S = \iota_K^*([H]|_S)$.
$\Rightarrow$ If we have a hyperplane H in $\mathbb{P}^{g-1}$ containing D, then $H \cap \iota_K(S) - D \sim K - D$ and it spans the space which makes $\mathbb{P}^{g-1}$ with $\overline{D}$. $\Rightarrow \dim(H \cap \iota_K(S) - D) \geq l$, where $\dim \overline{D} + 1 + l + 1 = g$.
$\Rightarrow l = g - 1 - \dim \overline{D} - 1 = g - 1 - (d - s - 1) - 1 = g - d + s - 1$.
Take $H \cap \iota_K(S) - \overline{D} \Rightarrow \dim(H \cap \iota_K(S) - \overline{D})$
$= l = g - d + s - 1$. $\Rightarrow H \cap \iota_K(S) - \overline{D}$ is a subseries of an effective divisor linearly equivalent to $K - D$. ⌋

Applying (*) to a divisor $E \in |K - D|$, then, we see that