$\Rightarrow \phi$ is injective. Let $(s_1 = 0) = p$.

$\Rightarrow \omega/s_1 \in H^0(S, \Omega^1(-p))$.

$\Rightarrow \exists$ no $\sigma \in H^0(S, \Omega^1(-p-q))$ s.t. $\phi(\sigma) = \omega/s_1$.

If so, $\dfrac{\omega}{s_1} = \dfrac{\sigma}{s_0}$. $\Rightarrow \dfrac{\omega(q)}{s_1(q)} \neq 0 = \dfrac{\sigma(q)}{s_0(q)} = 0$.

$\Rightarrow$ Contradiction $\Rightarrow \phi$ is not onto $\Rightarrow$
$h^0(K-p) > h^0(K-p-q)$.

② $p = q$. $\quad H^0(S, \Omega^1(-2p)) \xrightarrow{\phi} H^0(S, \Omega^1(-p))$

$\quad\quad \sigma \longmapsto \sigma/s_0$.

Let $\omega \in H^0(S, \Omega^1)$ with a single zero at p.
Consider ω/s_1. If $\sigma \in H^0(S, \Omega^1(-2p))$ s.t.

$\phi(\sigma) = \omega/s_1 = \sigma/s_0 \Rightarrow \omega/s_1(p) \neq 0 = \sigma/s_0(p) = 0$

$\Rightarrow$ Contradiction $\Rightarrow h^0(K-p) > h^0(K-2p)$.

($\Leftarrow$) ① p, q distinct, $\exists\ \eta \in H^0(S, \Omega^1(-p))$ s.t.
$\operatorname{im}\phi \not\ni \eta$. $\Rightarrow \sigma/s_0 \neq \eta$ for all η.

Comment on $H^0(S, \mathcal{O}(p))$. $\sigma \in H^0(S, \mathcal{O}(p))$ with $\sigma(p) \neq 0$
$\Rightarrow \sigma/s_0$ is meromorphic on S with a single pole at p
and holomorphic on $S - \{p\}$. $\Rightarrow S \cong \mathbb{P}^1$, where $(s_0 = 0) = p$.
$\Rightarrow \sigma = 0$ at $p \Rightarrow \sigma/\sigma'$ is holomorphic $\Rightarrow \sigma \doteq c\sigma'$
$\Rightarrow \dim H^0(S, \mathcal{O}(p)) = 1 = h^0(p) \Rightarrow$ By R-R,
$h^0(K-p) = g-1$.

If $\exists$ no $\eta \in H^0(S, \Omega^1(-p))$ s.t. $\eta(q) \neq 0$,
$\quad \psi : H^0(S, \Omega^1(-p)) \longrightarrow H^0(S, \Omega^1(-p-q))$ given by