the generic point. $\Rightarrow$ $|D|$ is of dim 0 $\Rightarrow$ $|D|$ is just a one-point set. $\Rightarrow$ The generic fiber of $\mu^{(g)}$ is one point. $\Rightarrow$ $\mu^{(g)}$ is one to one generically.

Here we useed Sard's theorem. ⌈More precisely, $\mu^{(g)} : S^{(d)} \longrightarrow J(S)$ is nonsingular for the generic points $\Rightarrow \exists$ a set $K \subset S^{(d)}$ s.t $\mu^{(g)}$ is singular on K and the measure of K is zero. $\Rightarrow$ By lemma 1.1 P68 (Hirsch) $\mu^{(g)}(K)$ is a set of measure zero. $\Rightarrow \mu^{(g)} : S^{(d)} - \mu^{(g)^{-1}}(\mu^{(g)}(K)) \longrightarrow J(S) - \mu^{(g)}(K)$ is a covering map.⌋

By P69, (Hirsch) Morse-Sard Theorem, the set of regular values of $\mu^{(g)}$ is dense, i.e. $A = \{\lambda \in J(S) \mid |J(\mu^{g})| \neq 0$ at all q s.t $\mu^{g}(q) = \lambda\}$ is dense in $J(S)$. $\Rightarrow$ Since $S^{(g)}$ is compact, by the inverse function theorem, A is open. $\Rightarrow \mu^{(g)^{-1}}(A)$ is open and dense in $S^{(g)}$. For, if it is not, $\exists$ $x_0 \in S^{(g)}$ s.t $x_0 \notin \overline{\mu^{(g)^{-1}}(A)}$. $\Rightarrow \exists$ U_{x_0} open and $x_0 \in U_{x_0}$ s.t $U_{x_0} \cap \overline{\mu^{(g)^{-1}}(A)} = \phi$, and open $V \subset U_{x_0}$ s.t $\mu^{(g)}(V)$ open in $J(S)$. $\Rightarrow$ $\mu^{(g)}(V) \cap A \neq \phi$ $\Rightarrow$ Contradiction since $(\mu^{(g)})^{-1}(A) \cap V = \phi$. ⌋

Note that as a corollary to Jacobi inversion, we see that every divisor of degree $\geq g$ on a Riemann surface of genus g is linearly equivalent to an effective divisor.

⌈ Given a divisor D of degree d, consider $D - dP_0$.
$\Rightarrow$ $\deg(D - dP_0) = 0$ $\Rightarrow$ $D - dP_0 \in Div^0(S)$.
$\Rightarrow$ $\mu(D - dP_0) \in J(S)$ $\Rightarrow$ By Jacobi inversion, $\exists$ $P_1 + P_2 + \cdots + P_g$ s.t. $\mu(P_1 + \cdots + P_g - gP_0) = \mu(D - dP_0)$. $\Rightarrow$