By Abel's theorem, $\exists$ a meromorphic function f on S s.t $\sum P_i - g P_0 = D - d P_0 + (f)$. $\Rightarrow$ $D = \sum P_i + (d-g) P_0 - (f)$ $\Leftrightarrow$ D is linearly equivalent to $\sum P_i + (d-g) P_0$.
$\Rightarrow$ D is linearly equivalent to an effective divisor. ⌟

Consider in particular the case of a Riemann surface S of genus 1. Then $J(S) = \mathbb{C}/\Lambda$ and the map $\mu^{(1)}$ is given simply by

$$\mu : p \longmapsto \int_{p_0}^{p} \omega ,$$

where ω is a generator of $H^0(S, \Omega^1)$. By Abel's theorem, $\mu(p) = \mu(p')$ only if there exists a meromorphic function f on S with $(f) = (p - p_0) - (p' - p_0) = p - p'$; since we have seen that there are no meromorphic functions on S with only a single pole, it follows that the map $\mu^{(1)}$ is injective.

⌜ See p222, for nonexistence of a meromorphic function f with only a single pole on S with $g(S) = 1$. ⌟

By the Jacobi inversion theorem, the map is surjective as well, and so we have an isomorphism

$$\mu : S \longrightarrow J(S),$$

i.e., every Riemann surface of genus 1 is of the form $\mathbb{C}/\Lambda$ for some lattice $\Lambda \subset \mathbb{C}$.

⌜ By P223, ω is everywhere nonzero. $\Rightarrow$ $\frac{\partial \mu}{\partial z} = \frac{d\mu}{dz} \neq 0 = \omega/dz$

