nce of arguments $= 2\pi i \cdot$ some integer ($\because$ $p = p'$ on S $\Rightarrow f(p) = f(p')$). Every thing of the rest follows easily.

The Riemann – Roch Formula

The starting point for our discussion of linear systems is the natural question: given a divisor D on a Riemann surface S of genus g, determine the dimension of $H^0(S, \mathcal{O}(D))$, i.e., the number of meromorphic functions f on S with

$$(f) + D \geq 0.$$

Pf $H^0(S, \mathcal{O}(D)) = \langle s_1, s_2, \cdots s_n \rangle$. Let $(s_0 = 0) = D$.

$\Rightarrow$ s_i / s_0 is a meromorphic function f_i on S s.t

$(f_i) + D \geq 0$.

Given any meromorphic function f on S with $(f) + D \geq 0$, $f \cdot s_0$ is a section of $\mathcal{O}(D)$. $\Rightarrow$ $f \cdot s_0 \in H^0(S, \mathcal{O}(D))$.

See P136 ~ P137.

We will try to answer the question first for an effective divisor $D = \sum p_\lambda$ of degree d on S. We will assume moreover that the points p_λ are distinct – the only difference in the following computation if D has the multiple points is a much more cumbersome notation.

As with Abel's theorem, the problem becomes tractable when expressed in terms of differentials. Now if $f \in \mathcal{M}(S)$ with $(f) + D \geq 0$, then df is a meromorphic 1-form on S.