$\psi \circ \phi = id \Rightarrow \phi$ is one to one & ψ is onto.

((ψ is one to one, for, if $f^*H = g^*H$,
$\Rightarrow f(p) = [s_0(p), \cdots s_N(p)] \Rightarrow$ Each $s_i(p)$ defines a holomorphic section of f^*H, as we noted above.
$\Rightarrow \{s_0, \cdots s_N\}$ is linearly independent.
Assume $g(p) = [t_0(p), \cdots t_N(p)]$, $\Rightarrow$ Each t_i is a linear combination of $\{s_0, \cdots s_N\}$, since $t_0, \cdots t_N, s_0 \cdots s_N$ are sections of $f^*H = g^*H$.

Not systematic, logical.))

(i) Let $f: M \longrightarrow \mathbb{P}^{N_1}$, $p \longmapsto [s_0(p), \cdots s_{N_1}(p)]$ & $g: M \longrightarrow \mathbb{P}^{N_2}$, $p \longmapsto [t_0(p), \cdots t_{N_2}(p)]$

where $\{s_0, \cdots s_{N_1}, t_0, \cdots t_{N_2}\}$ forms a basis for $E \subset H^0(M, \mathcal{O}(f^*(H)))$. $\Rightarrow \exists$ no relation between $\{s_0, \cdots s_{N_1}\}$ & $\{t_0, \cdots t_{N_2}\}$ in general.

(ii) Suppose not all $\{s_0, \cdots s_{N-1}\}$ vanish at any point of M.

$$\begin{array}{ccc} f_{N-1}^*(H) & \longrightarrow & H \\ \downarrow & & \downarrow \\ M & \xrightarrow{f_{N-1}} & \mathbb{P}^{N-1} \subset \mathbb{P}^N \\ p & \longmapsto & [s_0(p), \cdots s_{N-1}(p)] \end{array} \qquad f_{N-1}^*(H) = f_N^*(H).$$

))

Note that the degree of the image of M under i_E — that is, the intersection of M with n general hyperplanes in $\mathbb{P}^N$ — is just the n-fold self-intersection of a representative divisor $D \in |E|$, that is,