be extended to $\mathbb{C}$. $-dw/w^2$ can not be extended to $\mathbb{C}$.

$j : A \longrightarrow S \subset \mathbb{P}^3$ is holomorphic $\Rightarrow$ Locally,

$j(z_1, z_2) = (f_1(z_1, z_2), f_2(z_1, z_2), f_3(z_1, z_2))$

$\Rightarrow$ We can express $\tilde{\omega}_i$ on $S-R$ as, locally,

$\tilde{\omega}_i = g_{i1}(u_1, u_2, u_3)\, du_1 + g_{i2}\, du_2 + g_{i3}\, du_3$

$\Rightarrow j^*\tilde{\omega}_i = g_{i1} \circ j \;\; j^*du_1 + g_{i2} \circ j\, j^*(du_2) + j^*g_{i3}\; j^*du_3$

$\Rightarrow j^*du_1 = df_1 = \frac{\partial f_1}{\partial z_1} dz_1 + \frac{\partial f_1}{\partial z_2} dz_2$

$\vdots \qquad \vdots \qquad \vdots$

$j^*du_3 = df_3 = \frac{\partial f_3}{\partial z_1} dz_1 + \frac{\partial f_3}{\partial z_2} dz_2$.

$\Rightarrow$ Since f_i, & $\frac{\partial f_i}{\partial z_j}$ are bounded, if $\tilde{\omega}_i$ is unbounded, g_{ij} is unbounded for some j, and $g_{ij} \circ j = j^* g_{ij}$ is unbounded. $\Rightarrow$ Contradiction to the fact ω_i is bounded. Here $g_{ij} \circ j = g_{ij}(f_1(z_1, z_2), f_2(z_1, z_2), f_3(z_1, z_2))$. Thus we see that $\tilde{\omega}_i$ is bounded on $S-R$ since S is compact.

$\Rightarrow \pi^*\tilde{\omega}_i$ is bounded on $\Sigma - \pi^{-1}R$, since π^* is just a pull-back.

$\Rightarrow$ By Riemann extension theorem on P9, $\pi^*\tilde{\omega}_i$ can be extended to Σ.

'More precisely', for example, $f : \mathbb{C} \longrightarrow \mathbb{C}$
$z \longmapsto z^2$

$f^*(g(w)\, dw) = g \circ f(z) \cdot \frac{df}{dz} dz$

$= g \circ f(z)\; 2z\, dz \Rightarrow$ If $g(w) = w^{-n}\tilde{g}(w)$, then $g \circ f(z) = z^{-2n}\,\tilde{g}(z^2)$. $\Rightarrow f^*(g\,dw)$ can