ON THE EXISTENCE OF ANALYTIC MAPPINGS BETWEEN TWO ULTRAHYPERELLIPTIC SURFACES

By Genkō Hiromi and Mitsuru Ozawa

§1. **Introduction.** Let R and S be two ultrahyperelliptic surfaces defined by two equations $y^2=G(z)$ and $u^2=g(w)$, respectively, where G and g are two entire functions having no zero other than an infinite number of simple zeros. Then one of the authors [6], [7] established the following perfect condition for the existence of analytic mappings from R into S.

Theorem A. *If there exists an analytic mapping φ from R into S, then there exists a pair of two entire functions $h(z)$ and $f(z)$ satisfying an equation*

$$f(z)^2G(z)=g\circ h(z)$$

and vice versa.

Let $\mathfrak{M}(R)$ be a family of non-constant meromorphic functions on R. Let f be a member of $\mathfrak{M}(R)$. Let $P(f)$ be the number of Picard's exceptional values of f, which we say α a Picard's value of f when α is not taken by f on R. Let $P(R)$ be a quantity defined by

$$\sup_{f\in\mathfrak{M}(R)}P(f)$$

(cf. [4]). Let $P(S)$ be the corresponding quantity attached to S.

In the present paper we shall give a perfect condition for the existence of analytic mappings from R into S in a case of $P(R)=P(S)=4$, which is more direct than theorem A, and shall give some characterizations of the surfaces R with $P(R)=3$ by the forms of defining functions G.

By a characterization, which was given in [5], of R with $P(R)=4$ by $G(z)$ we can put

$$F(z)^2G(z)=(e^{H(z)}-\gamma)(e^{H(z)}-\delta),\qquad H(z)\not\equiv\text{const.},$$
$$H(0)=0,\qquad \gamma\delta(\gamma-\delta)\neq 0 \tag{1.1}$$

with two suitable entire functions F and H and two constants γ and δ. Similarly if $P(S)=4$, we can put

$$f(w)^2g(w)=(e^{L(w)}-\gamma')(e^{L(w)}-\delta'),\qquad L(w)\not\equiv\text{const.},$$
$$L(0)=0,\qquad \gamma'\delta'(\gamma'-\delta')\neq 0 \tag{1.2}$$

Received May 27, 1965.