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ON THE GROWTH OF ALGEBROID FUNCTIONS WITH SEVERAL DEFICIENCIES, II

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In our previous paper [6] we proved the following result:

Let $y(z)$ be an n-valued transcendental entire algebroid function with n finite deficient values a_j, $j=1, \cdots, n$. Then the lower order of $y(z)$ is positive.

A corresponding result for a general algebroid function was established with an additional condition. In this paper we shall prove the following theorem:

THEOREM 1. *Let $y(z)$ be an n-valued transcendental algebroid function. Assume that y has $n+1$ deficient values a_j, $j=1, \cdots, n+1$. Then the lower order of y is positive.*

Toda [7] generalized the following Nevanlinna theorem [4] to algebroid functions: Let $f(z)$ be a meromorphic function of order $\lambda<\infty$. Then there is a positive constant $k(\lambda)$ for which

$$K(f)=\varlimsup_{r\to\infty}\frac{N(r; 0, f)+N(r; \infty, f)}{T(r, f)}\geqq k(\lambda),$$

unless λ is a positive integer.

Toda's definition of $k(\lambda)$ is

$$\inf K(f)=\inf \varlimsup_{r\to\infty}\frac{\sum_{j=1}^{n+1} N(r; a_j, y)}{T(r, y)},$$

where infimum is taken over all the n-valued algebroid functions of order λ.

Again it is an important problem to determine the exact value of $k(\lambda)$. We shall determine it for $0\leqq\lambda\leqq 1$.

THEOREM 2.

$$k(\lambda)=\begin{cases}1 & \textit{for} \quad 0\leqq\lambda<1/2,\\ \sin\pi\lambda & \textit{for} \quad 1/2\leqq\lambda\leqq 1.\end{cases}$$

As an obvious corollary we have

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