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KODAI MATH. J.
23 (2000), 27–34

UNICITY THEOREMS FOR MEROMORPHIC FUNCTIONS

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Abstract

This paper studies the problem of uniqueness of meromorphic functions. In this paper we will improve a result given by K. Tohge.

§1. Introduction

By a "meromorphic function" we will mean a meromorphic function in the complex plane. It is assumed that the reader is familiar with the notations of the Nevanlinna theory that can be found, for instance, in [2] or [4]. Let f and g be two non-constant meromorphic functions and a be a value in the extended complex plane. We say that f and g share a value a IM (ignoring multiplicity), if f and g have the same a-points, and also they share the value a CM (counting multiplicity), if f and g have the same a-points with the same multiplicity. Let k be a positive integer or ∞, we denote by $\bar{E}_{k)}(a, f)$ the set of a-points of f with multiplicity $\leq k$ (ignoring multiplicity), by $N_{k)}(r, 1/(f-a))$ the counting function of a-points of f with multiplicity $\leq k$ and by $N_{(2}(r, 1/(f-a))$ the counting function of a-points of f with multiplicity ≥ 2 (See [4]). Finally we say a is a Picard exceptional value of f, if $f(z) \neq a$.

In [3] K. Tohge proved the following:

THEOREM 1. *Let f and g be non-constant meromorphic functions that share three values* $0, 1, \infty$ CM *and* f', g' *share* 0 CM. *Then f and g satisfy one of the following*:

(i) $f \equiv g$,

(ii) $fg \equiv 1$,

(iii) $(f-1)(g-1) \equiv 1$,

(1.1) (iv) $f + g \equiv 1$,

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* Project supported by NSFC and RFDP

1991 *Mathematics Subject Classification*: 30D35
Received November 16, 1998; revised December 1, 1999.