A REMARK ON MEROMORPHICALLY MULTIVALENT FUNCTIONS WITH MISSING COEFFICIENTS

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Received 02:08:2010 : Accepted 12:03:2012

Abstract

The purpose of the present paper is to derive certain properties of meromorphically multivalent functions with missing coefficients.

Keywords: Analytic function; meromorphically multivalent function, subordination, missing coefficient.

2000 AMS Classification: 30C45.

1. Introduction

Let $\Sigma_p(n)$ denote the class of functions of the form

$$f(z) = z^{-p} + \sum_{k=n}^{\infty} a_k z^{-p+k} \quad (p, n \in N = \{1, 2, 3, \cdots\}),$$

which are analytic in the punctured open unit disk $U^* = \{z : 0 < |z| < 1\} = U \setminus \{0\}$. For functions $f(z)$ and $g(z)$ analytic in $U$, we say that $f(z)$ is subordinate to $g(z)$ in $U$, and we write $f(z) \prec g(z) \quad (z \in U)$, if there exists an analytic function $w(z)$ in $U$ such that $|w(z)| \leq |z|$ and $f(z) = g(w(z)) \quad (z \in U)$.

Furthermore, if the function $g(z)$ is univalent in $U$, then

$$f(z) \prec g(z) \quad (z \in U) \iff f(0) = g(0) \quad \text{and} \quad f(U) \subset g(U).$$

Many important properties and characteristics of various interesting subclasses of the class $\Sigma_p(n)$ of meromorphically multivalent functions were investigated extensively by several authors (see, e.g., [1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13]). In this note we shall derive certain properties of meromorphically multivalent functions with missing coefficients.

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