Cui, Ning; Chen, Zongxuan
Uniqueness for meromorphic solutions sharing three values with a meromorphic function
to some linear difference equations. (Chinese. English summary) [Zbl 1399.39001]

Summary: This paper deals with the uniqueness of a finite-order meromorphic solution \( f(z) \) of some linear difference equation
\[
a_1(z)f(z+1) + a_0(z)f(z) = F(z)
\]
sharing 0, 1, \( \infty \) CM with meromorphic function \( g(z) \) (where \( a_1(z), a_0(z) \) and \( F(z) \) are nonzero polynomials satisfying \( a_1(z) + a_0(z) \neq 0 \)), and obtain either \( f(z) \equiv g(z) \) or \( f(z) + g(z) \equiv f(z)g(z) \) or there exists a polynomial \( \beta(z) = az + b_0 \) and a constant \( a_0 \) satisfying \( e^{a_0} \neq e^{b_0} \), such that
\[
f(z) = \frac{1 - e^{\beta(z)}}{e^{a_0} - e^{b_0} - 1} \quad \text{and} \quad g(z) = \frac{1 - e^{\beta(z)}}{1 - e^{a_0} - e^{b_0}}, \quad \text{where} \ (a \neq 0), \ b_0 \text{ are constants.}
\]

MSC:
39A06 Linear difference equations
39A45 Difference equations in the complex domain

Cited in 3 Documents

Keywords:
meromorphic function; difference equation; uniqueness

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