MATHEMATICAL ASSOCIATION OF AMERICA, INC.

ABSTRACT OF PAPER

Title of Paper: Convergent solutions of ordinary linear homogeneous difference equations

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ABSTRACT

The abstract should be in the form of a brief and concise statement of the main results or points of view of the paper, without demonstrations and with a minimum of formulae. It should not exceed 100 words and should be compressed if possible into a single paragraph. It should be written in the third person. The abstract should be typewritten and in a form suitable for immediate publication in the MONTHLY.

This paper deals with the solution of the linear homogeneous difference equation $X(s+1) = s^h A(s) X(s)$ where s is complex, $A(s)$ and $X(s)$ are 2 by 2 matrices and $A(s)$ is representable as a power series in s^{-1} with known coefficients convergent in some neighborhood of $s = \infty$. Formal power series solutions in powers of either s^{-1} or $s^{-\frac{1}{2}}$ are obtained. With one exception these are shown to be asymptotic representations of true solutions in certain regions of the s-plane. The asymptotic series solutions in general diverge, nevertheless are Borel summable and replaceable by convergent factorial series.