Brown, Jason I.; Dilcher, Karl; Manna, Dante V.
Series representations of theta functions in terms of a sequence of polynomials. (English) Zbl 1281.11021
Fibonacci Q. 50, No. 1, 5-10 (2012).

Summary: We derive series expansions for the Jacobi theta functions $\theta_j(q)$, $j = 2, 3, 4$, and for $\theta_3(z, q)$, all in terms of a certain sequence of sparse binomial-type polynomials. As consequences we obtain series identities involving second-order recurrence sequences and Chebyshev polynomials of the first kind.

MSC:
11B65 Binomial coefficients; factorials; $q$-identities
11F27 Theta series; Weil representation; theta correspondences
05C31 Graph polynomials
33E20 Other functions defined by series and integrals

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