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Identities for linear recursive sequences of order 2. (English) Zbl 07438942
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Summary: We present here a general rule of construction of identities for recursive sequences by using sequence transformation techniques developed in [Electron Res. Arch. 28, No. 2, 1049–1062 (2020; Zbl 1443.05017)]. Numerous identities are constructed, and many well known identities can be proved readily by using this unified rule. Various Catalan-like and Cassini-like identities are given for recursive number sequences and recursive polynomial sequences. Sets of identities for Diophantine quadruple are shown.

MSC:

11B39 Fibonacci and Lucas numbers and polynomials and generalizations
11B83 Special sequences and polynomials
05A19 Combinatorial identities, bijective combinatorics
05A05 Permutations, words, matrices
05A15 Exact enumeration problems, generating functions

Keywords:

Girard-Waring identities; Catalan-like identity; Cassini-like identity; Diophantine quadruple; balancing polynomials; balancing numbers; Fibonacci numbers; Lucas numbers; recursive sequence; Pell numbers; Pell-Lucas polynomials; Chebyshev polynomials of the first kind; Chebyshev polynomials of the second kind; Pell polynomials; Lucas polynomials; Fermat polynomials; Fermat numbers

Full Text: DOI

References:
