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More New Algebraic Identities and the Fibonacci Summations Derived From Them,

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Abstract

In this paper, we introduce certain algebraic identities that we believe are new. For each of these algebraic identities, one side telescopes when summed. A link to the Fibonacci/Lucas numbers then facilitates the derivation of closed forms for reciprocal series that involve the Fibonacci/Lucas numbers. The term that defines the denominator of each summand contains squares of Fibonacci related numbers, with subscripts in arithmetic progression.