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*A Non-Linear Recurrence Identity Class for Terms of a Generalized
Linear Recurrence Sequence of Degree Three,*
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Abstract

We state, and prove by a succinct matrix method, a new non-linear identity for terms generated by a general (linear) third order recurrence equation, and show it recovers a result for the well-known Horadam sequence. We then produce a fully generalized version of the identity that possesses three additional characterizing parameters and describes a new class of identities.