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Towards Formulating a Tagiuri Generating Method Conjecture,
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Abstract

This paper continues the work on the Tagiuri Generating Method (TGM) for production of Fibonacci identities, recently introduced at the Caen Fibonacci conference. TGM starts with a trivial identity in products of Fibonacci numbers, for example, $F_{n+a}F_{n+b}F_{n+c} = F_{n+a}F_{n+b}F_{n+c} + F_{n+a}F_{n+b}F_{n+c} - F_{n+a}F_{n+b}F_{n+c}$. Using the Tagiuri identity, $F_{n+x}F_{n+y} = F_nF_{n+x+y} + (-1)^nF_xF_y$, TGM then makes substitutions on two-factor products in the start identity. TGM is capable of simply generating one-parameter families of identities. These identities are complex; in general, nothing further can be uniformly said about them. However, the histograms of the indices occurring in the family of identities have specific and interesting patterns. The purpose of this paper is to examine a new one-parameter family of identities that is rich enough to suggest a general conjecture about the histograms of arbitrary one-parameter families of identities arising from TGM. The one-parameter family studied also has interest in its own right.