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Abstract

The Fibonacci identity

$$F_n^4 - F_{n+1}^4 - 10F_{n+2}^4 - F_{n+3}^4 + F_{n+4}^4 = 6F_{2n+4}^2$$

belongs to a family of identities where each identity contains only one product on the right side. In this paper we give this family together with two other such families. We also state two conjectures that give the form of similar identities. Finally, we give the expansions of L_n^{2m} and F_n^{2m} in terms of Lucas numbers with even subscripts.