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The Meta-C-Finite Ansatz,
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Abstract

The Fibonacci numbers satisfy the famous recurrence $F_n = F_{n-1} + F_{n-2}$. The theory of C-finite sequences ensures that the Fibonacci numbers whose indices are divisible by m, namely F_{mn}, satisfy a similar recurrence for every positive integer m, and these recurrences have an explicit, uniform representation. We will show that $a(mn)$ has a uniform recurrence over m for any C-finite sequence $a(n)$ and use this to automatically derive some famous summation identities.