Title: Yet another generalization of Sylvester's theorem and its application

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In this paper, we consider Sylvester's theorem on the largest prime divisor of a product of consecutive terms of an arithmetic progression, and prove another generalization of this theorem. As an application of this generalization, we provide an explicit method to find perfect powers in a product of terms of binary recurrence sequences and associated Lucas sequences whose indices come from consecutive terms of an arithmetic progression. In particular, we prove explicit results for Fibonacci, Jacobsthal, Mersenne and associated Lucas sequences.

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