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Title: On the resolution of equations $Ax^n - By^n = C$ in integers x, y and $n \geq 3$, I

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In our paper we initiate a systematic treatment for solving the title equation for bounded positive integer coefficients A, B and C . To illustrate our approach we explicitly solve the equation in integers x, y and n with $|xy| > 1$, $n \geq 3$ for a collection of coefficients A, B, C . We first derive, for concrete values of $A, B, C \leq 100$, a relatively small upper bound for n , provided that the equation under consideration has no solution with $|xy| \leq 1$ (cf. Theorem 1). Then we give among others all the solutions (x, y, n) for $C = 1$, $A, B \leq 20$ (cf. Theorem 3), and for $A = C = 1$, $B \leq 70$ (cf. Theorem 4). Our method, which may, with some effort, be extended to larger values of A, B and C , combines a wide variety of techniques, classical and modern, in Diophantine analysis.

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