Collatz problem and conjecture. A generalization of the problem

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There are still numerous unsolved problems in Mathematics, Physics, Chemistry, Biology, Philosophy $\cdots$. Many questions are still waiting for answers. One of the unsolved problems in Mathematics, which takes our attention by its beauty it is Collatz problem, with its conjecture.

Let us consider $(2, 3, 1, 1, n)$ as a solution of Collatz problem. Let us explain origination of the numbers inside of brackets. 2 comes from "If n is even, we halve it $(n/2)$" condition, 3 and 1 come from "else we do "triple plus one" and get $3n + 1$" condition. Finally, 1 is the number to which the process for all numbers converges.

Now we would like to consider (b, k, c, d, n) numbers such that the following holds

1. If n is divisible to b, take n/b

2. Else, take $kn + c$,

such that this process converges to d. This generalization contains the Collatz problem as the partial case. Concerning to this generalization we have formulated the following sequence of the questions:

1. Find (k, b, c, d, n) for our generalized problem

2. For which b and k differ from 2 and 3 respectively, the Collatz conjecture is true?

3. Find solutions of the generalized problem, when it is not matter which two numbers of (k, b, c, d, n) are co-prime numbers

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