A: Weak pseudorandom generator

Memory limit: **128 MB**

Byteland's Homeland Security Agency is struggling fighting terrorists. There's a new terrorist organization, and they are encrypting all their communications. Secret agent Johnny infiltrated that organization, but he managed to send only a single message before Operations HQ lost all communications with him. Here's the intel: Each organization member has their own encryption key which is generated using a linear pseudorandom number generator. For given parameters p, x_0, a, b it generates the sequence $f_0 = x_0$, $f_{i+1} = (a \cdot f_i + b) \mod p$. The organization leader uses key number f_i, and i^{th} of the members uses key f_i. Once you become a member there's no way to leave the organization. In his message Johnny also sent the parameters of the generator and his own key x. Homeland Security Agency is now trying to decipher captured communications. You're given a bit different task: try to find out how many members the organization could possibly have, that is, find any k such that $f_k = x$. The organization is screening their candidates very carefully (this is even more true now as they probably learned Johnny's real identity) so surely they haven't inducted anyone after agent Johnny.

Input

The first and only line of input contains five integers separated by single spaces: p, x_0, a, b, x ($2 \le p < 10^9$, p is prime, $0 \le x_0, a, b, x < p$). The first four numbers are parameters of the generator, and the last one is agent Johnny's key.

Output

In the first and only line of output you should print number k such that $f_k = x$ and $0 \le k \le 10^{18}$, or the word `NIE` if such k doesn't exist. If there's more than one such k, you can print any of them.

Example

Input	Output
5 3 2 1 0	2

The generated sequence is $3, 2, 0, 1, 3, 2, 0, 1, 3, 2, 0, 1, \ldots$ In particular $f_2 = 0$.

Input	Output
7 1 2 0 5	NIE

The generated sequence is $1, 2, 4, 1, 2, 4, 1, 2, 4, \ldots$ There's no key with value 5, perhaps the organization already knew that Johnny is a double agent?