D. Iterated Linear Function

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Consider a linear function $f(x) = Ax + B$. Let's define $g^{(0)}(x) = x$ and $g^{(n)}(x) = f(g^{(n - 1)}(x))$ for $n > 0$. For the given integer values A, B, n and x find the value of $g^{(n)}(x)$ modulo $10^9 + 7$.

Input

The only line contains four integers A, B, n and x ($1 \le A, B, x \le 10^9$, $1 \le n \le 10^{18}$) — the parameters from the problem statement.

Note that the given value n can be too large, so you should use 64-bit integer type to store it. In `C++` you can use the `long long` integer type and in `Java` you can use `long` integer type.

Output

Print the only integer s — the value $g^{(n)}(x)$ modulo $10^9 + 7$.

Examples

input
3 4 1 1
output
7

input
3 4 2 1
output
25

input
3 4 3 1
output
79