

Sum of Squares

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 256 megabytes

You're given a polynomial $A(x) = a_0 + \dots + a_n x^n$ with integer coefficients and an integer m . Consider a multivariate polynomial $D(x_1, \dots, x_m)$, defined as

$$D(x_1, \dots, x_m) = \prod_{i=1}^m A(x_i) \prod_{j=1}^{i-1} (x_i - x_j).$$

Let s be the sum of squares of all coefficients of $D(x_1, \dots, x_m)$. Find s modulo $10^9 + 7$.

Input

The only line of input contains two integers n ($0 \leq n \leq 500$) and m ($0 \leq m \leq 10^9$).

The second line contains $n + 1$ integers a_0, \dots, a_n ($0 \leq a_i < 10^9 + 7$).

It is guaranteed that $a_n \neq 0$ and $a_0 \neq 0$.

Output

Print a single integer, the value of s modulo $10^9 + 7$.

Examples

standard input	standard output
2 0 1 2 3	1
2 1 1 2 3	14
2 2 1 2 3	264

Note

For $A(x) = 1 + 2x + 3x^2$ and $m = 2$, we have

$$D(x_1, x_2) = -9x_1^3 x_2^2 - 6x_1^3 x_2 - 3x_1^3 + 9x_1^2 x_2^3 - x_1^2 x_2 - 2x_1^2 + 6x_1 x_2^3 + x_1 x_2^2 - x_1 + 3x_2^3 + 2x_2^2 + x_2.$$

Note that also $D = 1$ for $m = 0$ and $D(x_1) = 1 + 2x_1 + 3x_1^2$ for $m = 1$.