Problem E. Exp

Input file:	*standard input*
Output file:	*standard output*
Time limit:	5 seconds
Memory limit:	512 mebibytes

Find the expected amount of experience a hero will get for beating n monsters one by one, given that beating each monster gives the hero i units of experience ($0 \le i \le k$) with probability p_i independently, but if the hero gets more than x units of experience in total, their experience is capped to exactly x units, and display it modulo 998 244 353.

Input

The first line contains three integers n, k, and x ($1 \le n \le 10^7$; $1 \le k \le 100$; $1 \le x \le \min(10^7, \frac{5 \cdot 10^7}{k})$).

The second line contains $k+1$ real numbers $p_0, p_1, \ldots, p_k$ ($0 < p_i < 1$), given with exactly 4 decimal digits. The sum of p_i is equal to 1.

Output

Display the expected amount of experience the hero will get.

It can be shown that the sought number can be represented as an irreducible fraction $\frac{p}{q}$ such that $q \not\equiv 0 \pmod{998\,244\,353}$. Then, there exists a unique integer r such that $r \cdot q \equiv p \pmod{998\,244\,353}$ and $0 \le r < 998\,244\,353$, so display this r.

Examples

standard input	standard output
2 1 2 0.5000 0.5000	1
2 1 1 0.5000 0.5000	249561089
4 2 5 0.2000 0.5000 0.3000	909700083
10 4 23 0.4533 0.2906 0.1618 0.0071 0.0872	433575862

Note

In the first test case, the hero will get 0 units of experience with probability $\frac{1}{4}$, 1 unit of experience with probability $\frac{1}{2}$, and 2 units of experience with probability $\frac{1}{4}$. Hence, the expected amount is 1.

In the second test case, the hero will get 0 units of experience with probability $\frac{1}{4}$, and 1 unit of experience with probability $\frac{3}{4}$. The expected amount is $\frac{3}{4}$.