Rational Sums

Today Konstantin learned about convergence of series. For instance, series

$$\sum_{n=1}^{\infty} \frac{1}{n(n+1)} = \frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \cdots = 1,$$

$$\sum_{n=1}^{\infty} \frac{1}{n^2} = 1 + \frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \cdots = \frac{\pi^2}{6},$$

converge, while

$$\sum_{n=1}^{\infty} \frac{1}{n} = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \cdots = +\infty$$

diverges. See more at https://en.wikipedia.org/wiki/Convergent_series .

As you may note, some simple looking series can converge to quite complicated numbers, like $\frac{\pi^2}{6}$, e, etc. Konstantin noted this and decided to study only special case of rational functions sums, that is

$$\sum_{n=1}^{\infty} \frac{P(n)}{Q(n)},$$

where P and Q are polynomials and $Q(n) \neq 0$ for positive integer n. It can be proven that if $\deg P \leq \deg Q - 2$ the series converges. But, as example $\sum_{n=1}^{\infty} \frac{1}{n^2}$ shows, sum of rational functions can be irrational.

After some time, Konstantin decided to consider some very special case of rational functions when

$$Q(x) = (x + a_1)(x + a_2)\dots(x + a_n)$$

and

$$P(x) = b_0 + b_1 x + \cdots + b_{n-2} x^{n-2},$$

with constraint that $a_1, a_2, \dots, a_n$ are *distinct* non-negative integers. Fortunately, it can be proven that in this case sum of the series above is rational number. Now Konstantin want you to calculate it.

Input Format

The first line of input contains single integer, n. The next line contains n integers $a_1, a_2, \dots, a_n$, separated by space. The next line $n-1$ integers contains $b_0, b_1, \dots, b_{n-2}$.

Constraints

- $2 \leq n \leq 5000,$
- $0 \leq a_i \leq 5000,$
- $0 \leq b_i \leq 10^9.$
- $a_1, \dots, a_n$ are distinct.

Subtasks

Solutions that works correctly for $n \leq 100$ will score at least 50% of points.

Output Format

If answer is irreducible fraction $\frac{a}{b}$, print $ab^{-1} \bmod (10^9+7)$, where b^{-1} is multiplicative inverse of b modulo 10^9+7. It is guaranteed that $b \mod 10^9+7 \neq 0$.

Sample Input 0

```
2
0 1
1
```

Sample Output 0

```
1
```

Explanation 0

the sum is

$$\sum_{n=1}^{+\infty} \frac{1}{n(n+1)} = \frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \cdots = 1.$$

Sample Input 1

```
3
0 1 2
1 3
```

Sample Output 1

```
750000007
```

Explanation 1

the sum is

$$\sum_{n=1}^{+\infty} \frac{1+3n}{n(n+1)(n+2)} = \frac{4}{6} + \frac{7}{24} + \frac{10}{60} + \frac{13}{120} + \cdots = \frac{7}{4}.$$