Problem D. Corridor Tuning

There are n resonators placed in order along a corridor. The current frequency offset of the i-th resonator is a_i, and its target offset is b_i.

The tuning device can only be activated from one end of the corridor. In one operation, you may choose any nonzero integer x and perform one of the following operations:

1. Choose k $(1 \le k \le n)$ and add x to every number in the prefix $a_1, a_2, \ldots, a_k$;
2. Choose k $(1 \le k \le n)$ and add x to every number in the suffix $a_k, a_{k+1}, \ldots, a_n$.

x may be positive or negative. Regardless of the magnitude of $|x|$, the modification counts as exactly one operation.

Find the minimum number of operations required to transform sequence a into sequence b.

Input

The first line contains an integer T $(1 \le T \le 10^4)$, the number of test cases.

For each test case:

- The first line contains an integer n $(1 \le n \le 2 \times 10^5)$.
- The second line contains n integers $a_1, a_2, \ldots, a_n$ $(-10^9 \le a_i \le 10^9)$.
- The third line contains n integers $b_1, b_2, \ldots, b_n$ $(-10^9 \le b_i \le 10^9)$.

It is guaranteed that the sum of n over all test cases does not exceed 2×10^5, and the sums of $\sum |a_i - a_{i-1}| (i \ge 2)$ and $\sum |b_i - b_{i-1}| (i \ge 2)$, taken over all test cases, do not exceed 10^4 respectively.

Output

For each test case, output one integer on a separate line, the minimum number of operations.

Example

standard input	standard output
4 3 0 0 0 -1 2 0 3 0 0 0 3 1 4 4 1 4 2 8 6 9 7 13 2 -7 10 -7 10	2 3 1 0

Note

For the first test case, one possible sequence of operations is:

1. Add -3 to a prefix of length 1, obtaining $[-3, 0, 0]$.
2. Add 2 to a prefix of length 2, obtaining $[-1, 2, 0]$.

For the third test case, adding 5 to the entire sequence is sufficient.