Quadratic Pieces

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

You are given an integer sequence $A = (A_1, A_2, \ldots, A_N)$ of length N.

A contiguous subsequence $(A_L, A_{L+1}, \ldots, A_R)$, defined by integers L and R such that $1 \leq L \leq R \leq N$, is said to be **quadratic** if the following condition is satisfied:

- There exists real numbers a, b, c such that for every integer i satisfying $L \leq i \leq R$, the equation $A_i = ai^2 + bi + c$ holds.

Your task is to partition the sequence A into several contiguous **quadratic** subsequences. Among all possible ways to do this, output the minimum number of such subsequences.

You are given T test cases. Output the answer for each test case.

Input

The input is given in the following format:

T
case_1
case_2
$\vdots$
case_T

Each test case is given in the following format:

N
$A_1\ A_2\ \ldots\ A_N$

- All inputs are integers.
- $1 \leq T \leq 10^5$.
- $1 \leq N \leq 2 \times 10^5$.
- $-10^{18} \leq A_i \leq 10^{18}$.
- Over all test cases in a single input, the sum of N is at most 2×10^5.

Output

Output T lines.
For the i-th line, print the answer to the i-th test case.

Example

standard input	standard output
4 12 -16 -9 -4 -1 0 0 0 0 1 4 9 16 8 2 0 2 5 0 3 0 8 1 0 5 1000000000000000000 2500000000000000000 0 2500000000000000000 1000000000000000000	3 3 1 1

Note

In the first example, the given sequence can be partitioned into three quadratic subsequences: $(-16, -9, -4, -1)$, $(0, 0, 0)$, and $(0, 1, 4, 9, 16)$. For each of these subsequences, $(a, b, c) = (-1, 10, -25)$, $(0, 0, 0)$, and $(1, -16, 64)$ satisfies the condition. It is not possible to divide the sequence into fewer than 3 quadratic subsequences, so the answer is 3.

In the fourth example, note that the input values may exceed the 32-bit integer range.