PROBLEM E. SOLVING EQUATION

Time limit: 1 second

Given the equation:

$$a_n X^n + a_{n-1} X^{n-1} + \cdots + a_1 X^1 + a_0 = 0$$

Your task is to find the smallest integer value of X satisfying the above equation.

Input

The first input line contains a positive integer T ($T \leq 50000$), the number of test cases. T groups of lines followed, each describes a test case. Each test case consists of:

- One line with a positive integer n ($n \leq 3$).
- The next line contains $n + 1$ integers $a_n, a_{n-1}, \ldots, a_0$. Their absolute value do not exceed 30000 and $a_n \neq 0$. It is guaranteed that the given equation has at least one integer solution.

Output

Output T lines, the i-th line contains the smallest integer solution of the i-th test case.

Sample

INPUT	OUTPUT
2 2 1 4 4 2 1 -4 3	-2 1