People who have decent idea about floating-point number know that floating-point numbers cannot express the value zero. So in case of floating-point numbers very small values can be interpreted as zero. For example in case of double and long double data type of C/C++ we cannot represent values smaller than $1.7 * 10^{-308}$ and $3.4 * 10^{-4932}$ respectively. While all the computers have to bear with this fault of floating-point numbers in this problem we will have to deal with a computer with a greater fault. Just look at the following equation:

$$x_0 + x_1\sqrt{a_1} + x_2\sqrt{a_2} + x_3\sqrt{a_3} + x_4\sqrt{a_4} + x_5\sqrt{a_5} + x_6\sqrt{a_6} = 0$$

Here all x and all a can only take integer values. Given the values of a_1, a_2, ..., a_n it may be possible to find such values of x_0, x_1, ..., x_n so that the value of the LHS of above expression is nearly zero. Such values of x can be called the integer roots of the above expression (Note that if x_i were allowed to be real numbers then there would be infinite numbers of solutions but that is not the case for for integer solutions). Our faulty computer does all the calculations properly but whenever a value becomes below 10^{-4} (positive or negative) it considers it as zero. Given the values of a_1, a_2, ..., a_6 your job is to find the roots of the equation above in the faulty computer. To be more specific $(x_0, x_1, \ldots, x_6)$ are the roots of the above equation in the faulty computer if and only if

$$|x_0 + x_1\sqrt{a_1} + x_2\sqrt{a_2} + x_3\sqrt{a_3} + x_4\sqrt{a_4} + x_5\sqrt{a_5} + x_6\sqrt{a_6}| < 10^{-4}.$$

To solve this problem dont consider other anomalies this fault can cause: e.g. if $a_1 = 0$, then $\sqrt{a_1}$ cannot be zero because of this fault but we will ignore this fault.

Input

First line of the input file contains an integer N ($N \leq 60$) which denotes how many sets of inputs will be there. The description of each set is given below.

Each line contains six integers which actually denotes the value of a_1, a_2, ..., a_6 respectively. You can assume that $100 > a_1, a_2, \ldots, a_6 \geq 0$.

Output

For each set of input produce one line of output. This line contains the serial of output followed by seven integers which denotes the values of x_0, x_1, ..., x_6 : the roots of the given equation. Your solution must be such that $|x_i| < 10$, for $i = 0 \ldots 6$ and of course $\sum_{i=0}^{6} |x_i| \neq 0$. If there is no such roots then produce an output of the form below instead:

Case X: No Solution.

If there is more than one solution then any one of the solutions will do.

Sample Input

```
3
1 1 1 1 1 1
1 2 3 4 5 6
6 5 4 33 0 0
```

Sample Output

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Case 1: -9 -9 -9 0 9 9 9
Case 2: -9 -9 -5 9 9 -6 2
Case 3: -8 -4 -5 3 4 -9 -9
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