

ARE YOU GOOD IN MATHS?

BABA taught properties of right angled triangle and asked a questions

"Can you find a right angled triangle whose length of hypotenuse is H and its area is A?"

INDIAN students can answer quickly.

Input

The first line of the input contains a single integer T (where $1 \leq T \leq 10^5$) denoting the number of test-cases. T test cases follow.

For each test case, there will be a single line containing two space separated integer H and A (where $1 \leq H \leq 10^6$ and $1 \leq A \leq 10^{12}$).

Output

Output the answer for each test-case in a single line. If it is not possible to find such a triangle, output -1.

Otherwise print 3 real numbers corresponding to the lengths of the sides of the triangle sorted in non-decreasing order.

NOTE:- Answer values upto 10^{-6} decimal places.

Example

Input:

```
4
24252 56578987908
1 1
2 2
10 10
```

Output:

```
-1
-1
-1
2.043096 9.789063 10.000000
```