R-Connected Components

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

For a positive integer R, define the number of connected components in the following infinite undirected graph as $f(R)$.

- The set of vertices is $\mathbb{Z}^2$. In other words, for any pair of integers x, y, there exists a vertex (x, y).
- There exists an edge between vertices (x_1, y_1) and (x_2, y_2) if and only if $|x_1 - x_2|^2 + |y_1 - y_2|^2 = R$.

Given a positive integer R, output $f(R)$. If $f(R)$ is infinite, output `inf`.

Given T test cases, solve each of them.

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{l}
T \\
\mathrm{case}_1 \\
\mathrm{case}_2 \\
\vdots \\
\mathrm{case}_T
\end{array}
$$

Each case_i $(1 \le i \le T)$ is given in the following format:

$$R$$

- All values in the input are integers.
- $1 \le T \le 100$
- $1 \le R \le 10^9$

Output

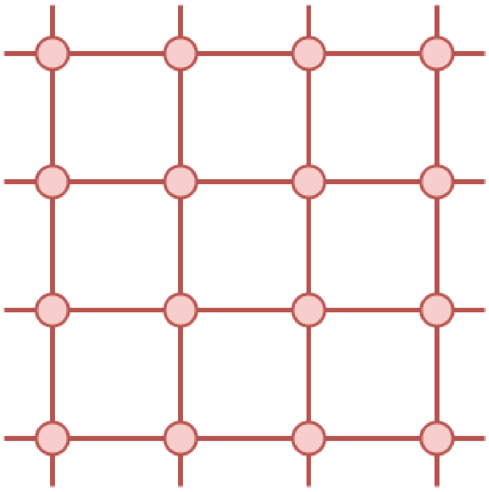
For each test case, output $f(R)$ if it is finite, otherwise output `inf`.

Example

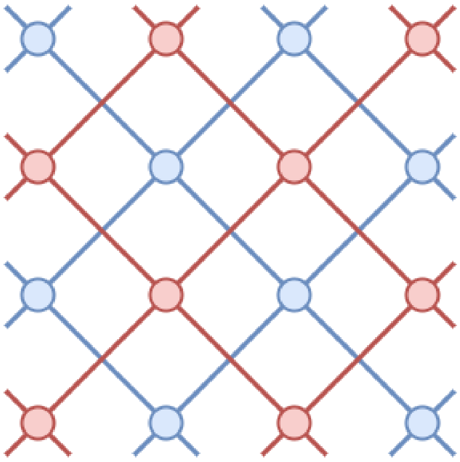
standard input	standard output
3 1 2 3	1 2 inf

Note

In the first test case, $R = 1$. The edges are formed as shown below, resulting in a single connected component.



In the second test case, $R = 2$. The edges are formed as shown below, resulting in two connected components.



In the third test case, $R = 3$. There are no edges in this graph, and the number of connected components is infinite.