Archery

Problem Statement

The Quora engineering team went to an archery offsite recently.

At the training corner, there was a target on the ground with a pile of arrows on it. Anna noticed that some of the arrows form the symbol 'Q' by intersecting the rings of the target.

The target is composed of N concentric circles and there are M arrows lying on it, each represented as a line segment.

The i-th circle is centered at the origin $(0,0)$ and has radius R_i. The i-th arrow is a line segment with endpoints $(x1_i, y1_i)$ and $(x2_i, y2_i)$.

Now, Anna wonders if it is possible to write a program to quickly count the number of 'Q's formed. A 'Q' is defined as a pair of a circle and an arrow such that the arrow intersects the circumference of the circle exactly once.

See the diagram for some examples of 'Q's:
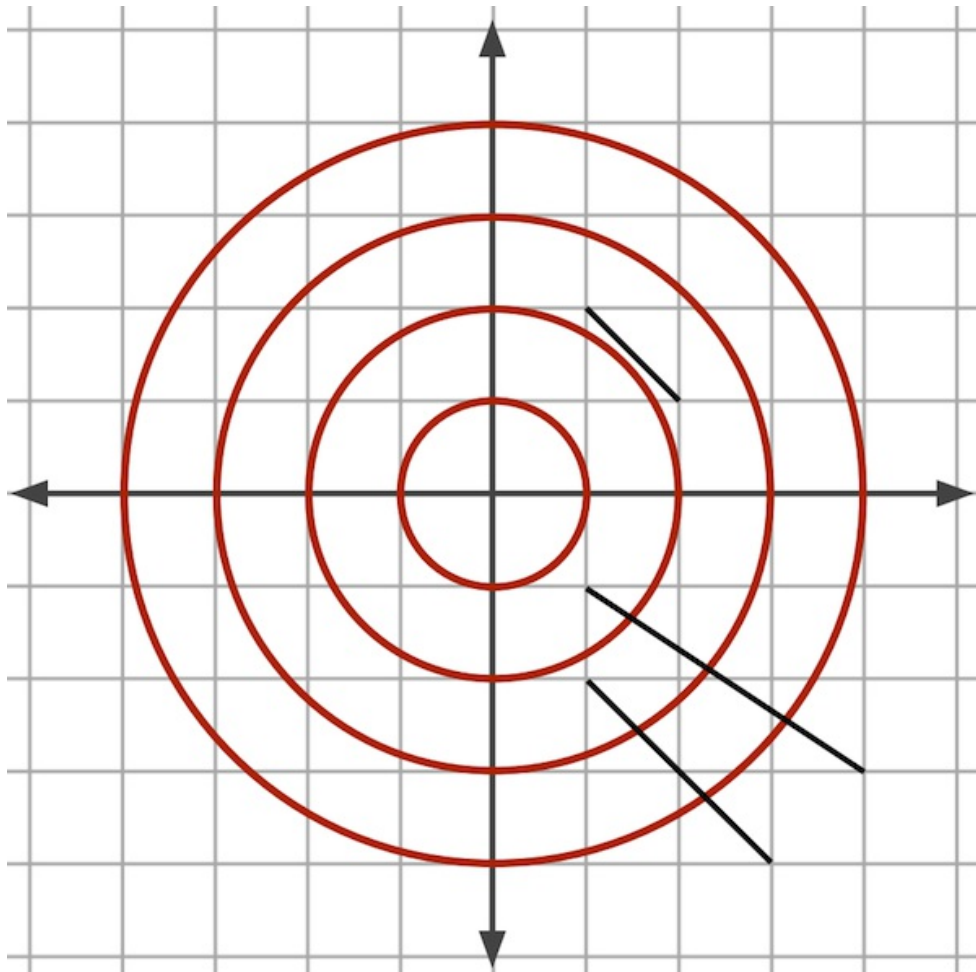
For simplicity, no endpoint of an arrow will lie on any circle, and no arrow will be tangent to a circle.

Constraints

For 100% of the test data, $1 \le N, M \le 10^5$

For 50% of the test data, $1 \le N, M \le 10^3$

All the R_i are less than 10^6 and greater than 0

All the coordinates are less than 10^6 by absolute value

Input Format

Line 1: One integer N

Line 2: N integers, R_i (the radii of the circles)

Line 3: One integer M

Line 4...M+3: Line $3 + i$ contains 4 integers: $x1_i$, $y1_i$, $x2_i$, $y2_i$, the coordinates of the endpoints of the i-th arrow.

Output Format

Line 1: One integer, the number of 'Q's.

Sample Input

```
4
1 2 3 4
3
1 -1 4 -3
2 1 1 2
1 -2 3 -4
```

Sample Output

```
5
```