Problem INCLINEDPLANE: Inclined plane

As an experimental physicist, Leonard has a lot of inclined planes (ramps) each of which is one inch wide. He wants to store them in a square area. To save space, he rotates the ramps in a way that they stand on their smallest side. To be able to play with his matchbox cars on the ramps he puts two ramps in a row, so that they are connected at their lowest points. To get his square of ramps financed he sets up an experiment that substitutes parts of his ramps in the array with ice replications. He needs many of these ice replications and asks you to calculate how many water he needs for the substitutes.

Leonard uses the coordinates of an axis-aligned rectangle to specify which part of the ramp array has to be replaced by ice substitutes, namely exactly those parts of ramps that stand on the specified floor area. The substitute ice blocks should have the same surface as the original ramps. An example of an array is given in the figure. The different densities of ice and water can be ignored as measuring inaccuracy.
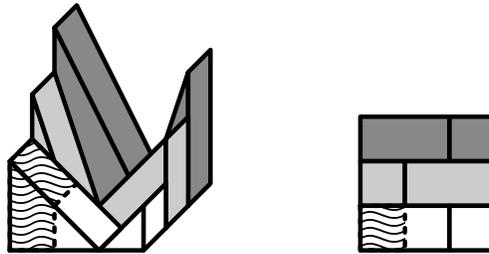

Figure 1: Array of 2nd test case with 1st query

Input

The input starts with the number of test cases C in one line ($0 < C < 100$). Each test case starts with a line consisting of the number of rows n. Then n lines follow, each describing one row of the ramp array, starting with the frontmost row. Each description of a row consists of three integers: The length l of the left ramp, the slope s_1 of the left ramp in height / length and the slope s_2 of the right ramp in the same notation. The next line gives the number of queries q, followed by q lines each describing one query. Each query specifies one rectangle of the floor of the ramps array that needs to have its ramps / ramp segments substituted. The four integers specify the front left corner followed by the back right corner of the rectangle ($(0, 0)$ is front left).

Consider the following limits: $0 < n, s_1, s_2, q \le 40\,000$ and $0 < l < n$.

Output

The volume under the ramps for each query in inch^3. Your result should be accurate up to 10^{-2} absolute precision.

Sample Input 1

```
2
4
2 1 1
2 1 1
2 1 1
2 1 1
2
0 0 4 4
1 1 3 3
3
2 1 1
1 3 1
2 2 3
2
0 0 1 1
2 0 3 1
```

Sample Output 1

```
16.00
2.00
1.50
0.50
```