Convex Polygon Area

Problem ID: convexpolygona
CPU Time limit: 1 second
Memory limit: 1024 MB
Difficulty: 1.9

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Source: Baylor Competitive Learning course

For this problem, you just need to be able to calculate the area of convex polygons.

Input

Input starts with an integer $1 \leq n \leq 100$, indicating the number of convex polygons. The next n lines each contain one convex polygon description. Each begins with an integer $3 \leq m \leq 100$ indicating the number of points in the polygon. Following this are m pairs of integers, where each pair represents the x and y coordinates of a vertex. The bounds on the coordinates are $-5\,000 \leq x, y \leq 5\,000$. The vertices are given in counter-clockwise order, and no two vertices are the same. As is typical for a polygon, the last vertex is connected to the first one.

Output

For each polygon, output its area.

Sample Input 1

```
2
3 1 1 2 1 2 2
4 0 0 10 0 13 5 10 8
```

Sample Output 1

```
0.5
52
```