
Never trust Ivan

P47610_en

Dotzè Concurs de Programació de la UPC - Final (2014-10-01)

You are given a convex polygon. What is the probability that choosing any three vertices, plus any point inside the polygon, the four points do not form a convex quadrilateral?

Input

Input consists of several cases. Every case begins with the number of points n , followed by n pairs of coordinates in clockwise or anticlockwise order. Assume $3 \leq n \leq 1000$, and that the coordinates are real numbers between -10^4 and 10^4 with at most two digits after the decimal point.

Output

For every case, print the asked probability with four digits after the decimal point. The input cases have no precision issues.

Sample input

```
3 2 0 3 1 4 0
4 0 0 0 10 10 10 0
5 7.2 -5.3 4.5 5.9 -1.2 6.3 -5.0 0 0 -8
```

Sample output

```
1.0000
0.5000
0.3609
```

Problem information

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