Find out the center of masses of a convex polygon.

Input

A series of convex polygons, defined as a number n ($n \leq 100$) stating the number of points of the polygon, followed by n different pairs of integers (in no particular order), denoting the x and y coordinates of each point. The input is finished by a fake "polygon" with m ($m < 3$) points, which should not be processed. No three points are aligned in any polygon.

Output

For each polygon, a single line with the coordinates x and y of the center of masses of that polygon, rounded to three decimal digits.

Sample Input

```
4 0 1 1 1 0 0 1 0
3 1 2 1 0 0 0
7
-4 -4
-6 -3
-4 -10
-7 -12
-9 -8
-3 -6
-8 -3
1
```

Sample Output

```
0.500 0.500
0.667 0.667
-6.102 -7.089
```