Digging for Treasure

On her visit to Absurdistan, Lea met many strange and interesting people. Some evening in a shady bar, she met a guy who was missing a leg. He told her he had been a pirate all his life until, one day, he contracted a severe case of seasickness that just wouldn't stop. After that, he never set sail again.

Lea bought him a couple of drinks and he began telling her his stories, boasting of booty and plunder. He even showed her one of his old treasure maps - it was an island, littered with different marks for buried treasure. The pirates did not want to miss a single piece of treasure. So, he told her, together with his crew, he dug up one big, convex hole, 2 meters deep, containing all of the treasure markers.

Lea could not believe him. Surely, this would take ages. Can you help her estimate how much earth the crew would have to move to dig such a hole?

Input

The first line of the input contains an integer t. t test cases follow.

Each test case begins with a line containing one integer n, the number of treasure markers on the island. n lines follow, each containing two integers x_i y_i detailing the location of one of the treasure markers.

Output

For each test case, print a line containing "Case #i: s" with i being the number of the test case, starting at 1, and s being the volume of the hole the crew would have to dig (in m^3). The answer should be correct up to an absolute or relative error of at most 10^{-6}.

Constraints

- $1 \leq t \leq 20$
- $3 \leq n \leq 1000$
- $-1000 \leq x_i, y_i \leq 1000$

Sample Input 1

```
2
3
1 1
2 2
1 3

5
0 0
2 2
0 2
2 0
1 1
```

Sample Output 1

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Case #1: 2.0
Case #2: 8.0
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Sample Input 2	Sample Output 2
5 5 -6 -7 -4 8 -5 -5 5 -5 -2 5 3 0 -5 3 3 4 4 5 3 5 -5 8 9 8 -6 -6 0 -5 8 10 7 1 0 2 1 8 0 4 9 3 1 3 3 6 8 7 6 7 3 5 1 8 5 3 5 0 7 7 10 0	Case #1: 161.0 Case #2: 5.0 Case #3: 265.0 Case #4: 109.0 Case #5: 79.0