A Garbage Problem

Omar Sampson just never knows when to quit. After buying a spider and dressing it like a pig, he now throws away all of his trash into the backyard lake so his pig-spider can live at peace in his trash can. The trash was the tipping point for the lake, and the Environmental Protection Agency has to come to the "rescue." In order to stop the spread of this pollution, head of the EPA Robert Frost lays out several plans for governor Arm-and-Hammer, but he picks number 2 without reading, leading to a dastardly plan involving covering the city of Autumnfield with an enormous glass dome! Mr. Frost has a lot of money, but isn't good at math and is cheap, so he has recruited you from the city to tell him how big the dome needs to be and where to put it to make sure all of Autumnville falls under his dome of wrath! But don't waste money building a dome any bigger than necessary. As payment for your service, he will let you out of the dome to work for him in placing other domes across the states! You, being a smart programmer, negotiate with him saying if you give him a program that will do it for him for any city, you and your family escape from the dome and are forever shielded from any of Mr. Frost's shields. Reluctantly, Mr. Frost agrees to your terms, but is only giving you four hours to complete this task! Hurry, or you'll be trapped in a dome forever!

Input

Input starts with a single number, T ($T < 1000$) the number of towns Mr. Frost wants to cover. For each town, there is a line with a single positive integer H ($H \leq 8000$), the number of houses in the town (Mr. Frost only cares about stopping *verbal* pollution). On each of the following H lines are two floating point decimals X and Y (both less than 25000 and with 1/1000 precision, you can assume no duplicates), which are the X and Y coordinates of the house.

Output

For each town output a line in the following format (without quotes): "Frost should put a dome *F* feet in diameter at (*X*, *Y*)" where F is the diameter, and X and Y are the coordinates for the center of the dome. Round all of these numbers to 3 decimal places. Separate each town with a blank line.

Sample Input

```
2
3
0 0
0 5
1 2.5
4
1.25 -3.5
1.25 -7.5
5.25 -7.5
5.25 -3.5
```

Sample Output

Frost should put a dome 5.000 feet in diameter at (0.000, 2.500)

Frost should put a dome 5.657 feet in diameter at (3.250, -5.500)