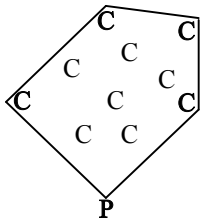
F - Herding Chickens
Input File: HerdingChicksIn.txt

Chicken farmer Fern enjoys literature; however her author friend E. B. White once warned her that he didn't know which was "more discouraging, literature or chickens". Fern thinks chickens, and so she has decided to construct a fence around her chickens to keep them in place. The chickens have become very territorial, and each chick roosts at the same spot in the chicken yard every day. To determine the length of the fencing, she will tie a string to a post at or below the south edge chicken yard and then walk in a clockwise direction pulling the string taught to encircle all of the chickens until she returns to the post (see below). Your task will be to determine the length of the string given the location of the post and each chicken's location.



C

_____ = string

C = chicken

P = post

Inputs

The first line of the input contains the number of chicken yards to enclose. This is followed by one data set for each yard. The first line of a data set contains two real numbers that are the x and y coordinates (in feet) of the post. The next line contains one integer, n, that is the number of chickens roosting in the yard. This is followed by one line per chicken. Each of these n lines contains two real numbers, which are the x and y coordinates (in feet) of a roosting chicken. Since the post is at or below the south edge of the yard, the y coordinate of the post is always less than the y coordinates of the chickens.

Outputs

There will be one line of output per chicken yard. This line will contain length of the string, in feet, that encircles all the chickens in the yard rounded to two decimal places.

Sample inputs	Sample output
2	160.00
0.0 0.0	113.14
6	
-30.0 20.0	
-30.0 0.0	
-20.0 5.0	
30.0 0.0	
1.0 1.0	
30.0 20.0	
0.0 -20.0	
6	
0.0 20.0	
10.0 5.0	
20.0 0.0	
5.0 -10.0	
-20.0 0.0	
5.0 10.0	