

The area of the union of circles

You are given N circles and expected to calculate the area of the union of the circles !

Input

The first line is one integer n indicates the number of the circles. ($1 \leq n \leq 1000$)

Then follows n lines every line has three integers

$X_i Y_i R_i$

indicates the coordinate of the center of the circle, and the radius. ($|X_i|, |Y_i| \leq 1000, R_i \leq 1000$)

Note that in this problem R_i may be 0 and it just means one point !

Output

The total area that these N circles with 3 digits after decimal point

Example

Input:

```
3
0 0 1
0 0 1
100 100 1
```

Output:

```
6.283
```