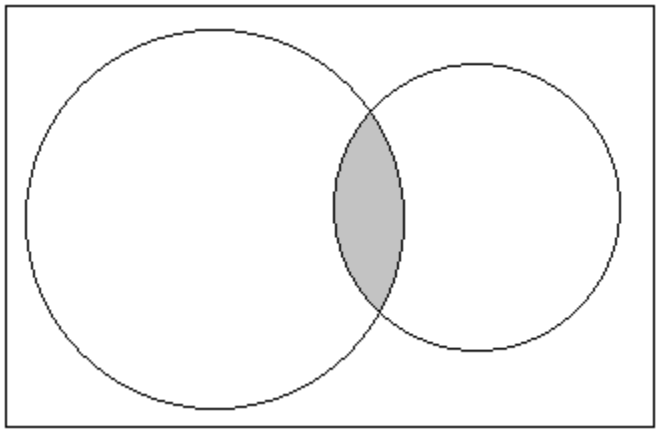
1118 – Incredible Molecules

In the biological lab, you were examining some of the molecules. You got some interesting behavior about some of the molecules. There are some circular molecules, when two of them collide, they overlap with each other, and it's hard to find that which one is over the other one.

Given two molecules as circles, you have to find the common area of the given molecules that is shaded in the picture.



Overlapping Molecules

Input

Input starts with an integer **T (≤ 12)**, denoting the number of test cases.

Each case contains six integers $\mathbf{x_1}$, $\mathbf{y_1}$, $\mathbf{r_1}$ and $\mathbf{x_2}$, $\mathbf{y_2}$, $\mathbf{r_2}$. Where $\mathbf{(x_1, y_1)}$ is the center of the first molecule and $\mathbf{r_1}$ is the radius and $\mathbf{(x_2, y_2)}$ is the center of the second molecule and $\mathbf{r_2}$ is the radius. Both the radiuses are positive. No integer will contain more than **3** digits.

Output

For each test case, print the case number and the common area of the given molecules. Errors less than $\mathbf{10^{-6}}$ will be ignored.

Sample Input	Output for Sample Input
3 0 0 10 15 0 10 -10 -10 5 0 -10 10 100 100 20 100 110 20	Case 1: 45.3311753978 Case 2: 35.07666099 Case 3: 860.84369