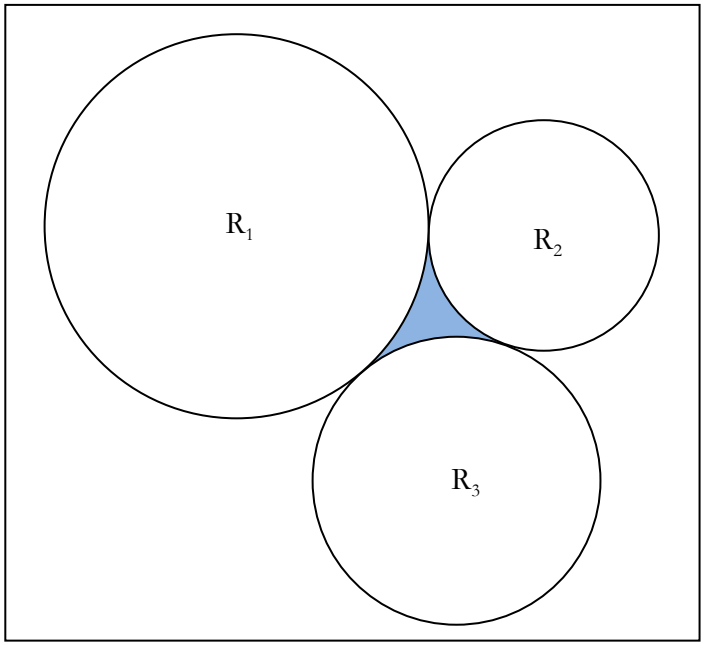
1331 – Agent J

Agent **J** is preparing to steal an antique diamond piece from a museum. As it is fully guarded and they are guarding it using high technologies, it's not easy to steal the piece. There are three circular laser scanners in the museum which are the main headache for Agent **J**. The scanners are centered in a certain position, and they keep rotating maintaining a certain radius. And they are placed such that their coverage areas **touch** each other as shown in the picture below:



Here $\mathbf{R_1}$, $\mathbf{R_2}$ and $\mathbf{R_3}$ are the radii of the coverage areas of the three laser scanners. The diamond is placed in the place blue shaded region as in the picture. Now your task is to find the area of this region for Agent **J**, as he needs to know where he should land to steal the diamond.

Input

Input starts with an integer **T (≤ 1000)**, denoting the number of test cases.

Each case starts with a line containing three real numbers denoting $\mathbf{R_1}$, $\mathbf{R_2}$ and $\mathbf{R_3}$ **($0 < R_1, R_2, R_3 \leq 100$)**. And no number contains more than two digits after the decimal point.

Output

For each case, print the case number and the area of the place where the diamond piece is located. Error less than $\mathbf{10^{-6}}$ will be ignored.

Sample Input	Output for Sample Input
3 1.0 1.0 1.0 2 2 2 3 3 3	Case 1: 0.16125448 Case 2: 0.645017923 Case 3: 1.4512903270