6457 Problem of Apollonius

Apollonius of Perga (ca. 262 BC - ca. 190 BC) was a Greek geometer and astronomer. In his noted work Epaphai, he posed and solved such a problem: constructing circles that are tangent to three given circles in a plane. Two tangent circles can be internally or externally tangent to each other, thus Apollonius's problem generically have eight solutions.

Now considering a simplified case of Apollonius's problem: constructing circles that are externally tangent to two given circles, and touches a given point(the given point must be on the circle which you find, can't be inside the circle). In addition, two given circles have no common points, and neither of them are contained by the other, and the given point is also located strictly outside the given circles. You should be thankful that modern mathematics provides you with plenty of useful tools other than euclidean geometry that help you a lot in this problem.

Input

The first line of input contains an integer T ($T \leq 200$), indicating the number of cases.

Each ease has eight positive integers x_1, y_1, r_1, x_2, y_2, r_2, x_3, y_3 in a single line, stating two circles whose centres are (x_1, y_1), (x_2, y_2) and radius are r_1 and r_2 respectively, and a point located at (x_3, y_3). All integers are no larger than one hundred.

Output

For each case, firstly output an integer S, indicating the number of solutions.

Then output S lines, each line contains three float numbers x, y and r, meaning that a circle, whose center is (x, y) and radius is r, is a solution to this case. If there are multiple solutions ($S > 1$), outputing them in any order is OK. Your answer will be accepted if your absolute error for each number is no more than 10^{-4}.

Sample Input

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1
12 10 1 8 10 1 10 10
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Sample Output

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2
10.00000000 8.50000000 1.50000000
10.00000000 11.50000000 1.50000000
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