# 11771   Dhaka Bots

Being the expert programmer that you are, you have decided to put your skills to proper use by making life easier for all vehicle-riding inhabitants of Dhaka city. That is right, you are now in the middle of a project that will eliminate all traffic jams! In a sudden fit of enthusiasm you start to create the control software for those autonomous vehicles, only to realize it is harder than it seemed. You are now to create a small part of that software.

The case you need to handle is simply this: find the time of collision between two vehicles, both going at (possibly different) constant speeds, one of them in a straight line and the other in a circle in counterclockwise direction. You may assume that the vehicles are running on a flat 2D plane, and that they can be modeled as square of a given size with edges parallel to a fixed Cartesian coordinate system at all times.
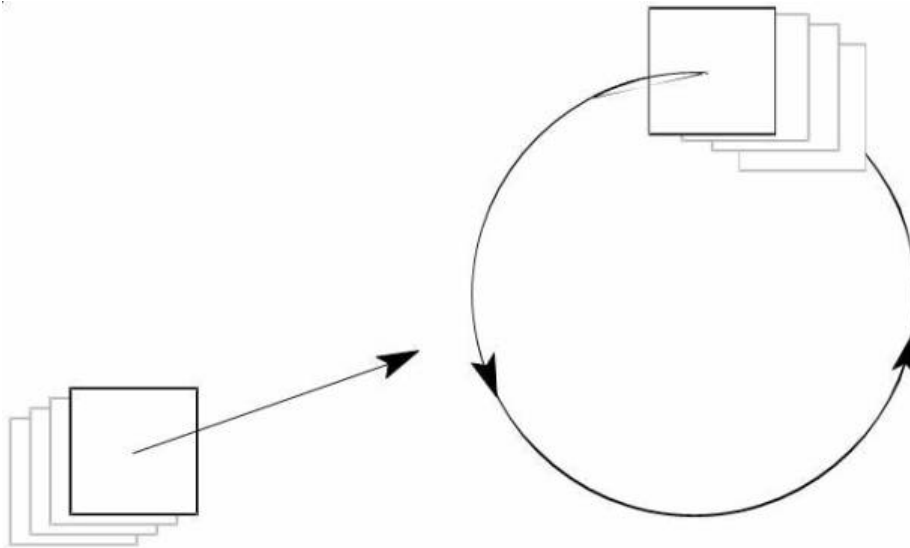
Input

The input file may contain multiple test cases (at most 100). The first line of the input file consists of a single non-negative integer t, the number of test cases in the file. This line is followed by t test cases, each consisting of exactly two lines of input. The first line describes the vehicle going in a straight line and has the format 's_A x_A y_A v_{Ax} v_{Ay}' (without the quotes). s_A is the length of each edge of the square representing this vehicle, (x_A, y_A) is its starting point of the center of the square, (v_{Ax}, v_{Ay}) is its velocity in unit distance traveled per unit time. The second line of input in a test case represents the vehicle going round in a circle, and has the format 's_B x_B y_B c_x c_y v_B'. Once again, s_B is the size of the square representing this vehicle, and (x_B, y_B) is the starting point of the center of this square. (c_x, c_y) is the center of the circular path followed by the center of this square, and v_B is its linear speed. All input numbers (other than t) are real numbers with at most two decimal places. They will also satisfy the following constraints: $|x_A|, |y_A|, |x_B|, |y_B|, |c_x||c_y| \leq 20000$, $|v_{Ax}|, |v_{Ay}| \leq 200$, $0 \leq v_B \leq 200$, $0 < s_A, s_B \leq 100$. It is also guaranteed that the two squares do not already overlap in their given starting states.

Output

There should be a single line of output for each test case in the input file, and it should have the format 'Case c: t'. c is the case number, starting from 1, and t is the time it takes before the vehicles collide. Values within an absolute error of 10^{-5} of the actual answer will be accepted. If they never collide after starting in the state given, t should be replaced with the string 'never'. Note that, for this problem, just grazing across the sides or just touching corners is *not* considered a collision.

Sample Input

```
2
2 -10 -10 1 1
2 0 5 0 0 10
2 -10 -10 1 1
2 0 5 0 0 1
```

Sample Output

```
Case 1: 7.216133
Case 2: never
```