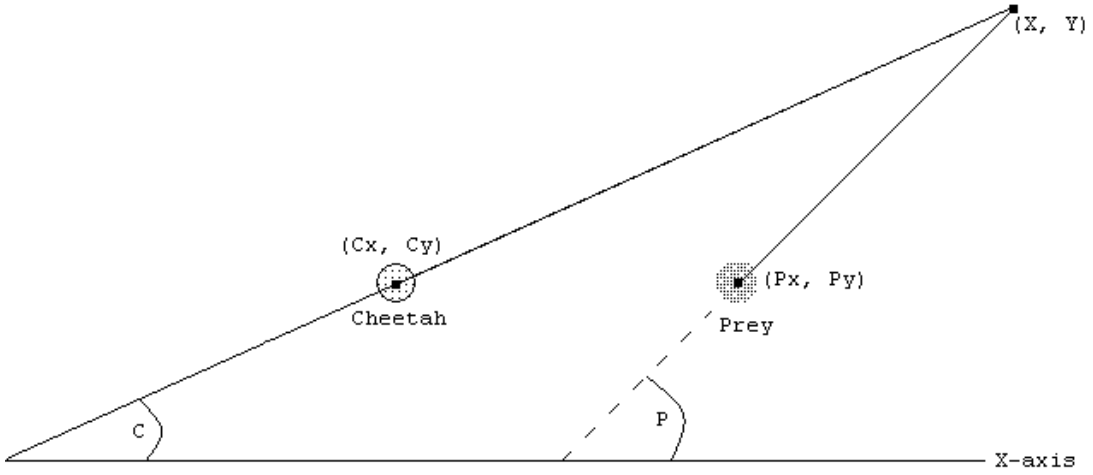
Problem D

Cheetah

Input: standard input
Output: standard output
Time Limit: 1 second



The cheetah is a beautiful hunting animal. Although it can gain incredible speed, it tires soon and so cannot maintain the speed for long. So in an attempt to catch a prey, the cheetah must choose a path of minimum length.

The cheetah quietly and discreetly closes in on the prey. When the cheetah is at position **(Cx, Cy)** and the prey at position **(Px, Py)**, the prey realizes that the cheetah is close by and starts running with the constant speed of **U** feet per second at an angle **P** with the positive direction of X-axis. The cheetah also starts running at a constant speed of **V** feet per second at an angle **C** to ensure that he can catch the prey with minimum effort. The cheetah, however, cannot maintain the speed for more than **L** seconds.

Provided the values of **Cx, Cy, Px, Py, P, U, V, L**, you have to find **C, T, X, Y**, where **T** is the time required for the cheetah to catch the prey and **(X,Y)** is the position at which the cheetah catches the prey.
The co-ordinates are in feet and range between **[0, 10000]**. The angles are in degrees and range between **[0, 360]**. The velocities range between **[0, 500]**. **L** ranges between **[0, 10000]**.

Input

The first line gives the number of test cases.

Each of the test case consists of a line containing **8** integers giving the values of $\mathbf{C_x}$, $\mathbf{C_y}$, $\mathbf{P_x}$, $\mathbf{P_y}$, **P, U, V, L** in that order.

Output

For each test case, if the cheetah can catch the prey, then print the values of **C, T, X, Y** in that order. Each value should have 2-digits after the decimal point. If the cheetah cannot catch the prey within **L** seconds, then print "sorry, buddy".

Sample Input	Output for Sample Input
2 0 0 6 0 135 1 1 10 0 0 6 0 135 1 1 3	45.00 4.24 3.00 3.00 sorry, buddy

Problem setter: Sadrul Habib Chowdhury
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