Czech ACM Student Chapter

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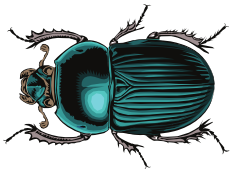
CTU Open Contest 2012 — Practice Session

Charlie the Cockchafer



`cockchaf.c`, `cockchaf.cpp`, `Cockchaf.java`

Charlie knows how to fly. Despite this, whenever Charlie wants to move from one point to another, it becomes a tedious task for him. The main trouble is that Charlie is a cockchafer. And it is a well-known fact that all cockchafers (do not confuse them with cockroaches) are clumsy and slow. Not only they need some time to fly along a straight line, they also spend more time making turns. Knowing their limitations, will you help Charlie to find the quickest route?

Input Specification

The input consists of several instances. The first line of each instance contains integers S and T ($1 \leq S, T \leq 1000$), where S is Charlie's speed in meters per second, and T is the speed of him turning in degrees per second. The second line contains four integers ($0 \leq X_f, Y_f, X_t, Y_t \leq 10000$) indicating the starting point (X_f, Y_f) and the destination (X_t, Y_t). All coordinates are given in meters.

Output Specification

For each input instance, print a single line containing one real number R, giving the shortest time Charlie needs to get from the initial to the final point. At the beginning, Charlie is facing north, which is the positive direction of Y-axis. So, he first needs to turn by D degrees ($0 \leq D \leq 180$) to an appropriate direction, then he can fly over a straight path to the final point. If the length of the straight flight is L, the total time will be $R = L/S + D/T$ seconds.

The answer will be accepted as correct if the difference between R and the answer computed by the judges is at most 0.001.

Sample Input

```
3 10
0 0 0 10
3 10
0 0 10 10
```

Output for Sample Input

```
3.3333
9.2140
```