Problem A. Rain

Input file:	standard input
Output file:	standard output
Time limit:	2 seconds
Memory limit:	256 megabytes

It's raining. A spherical man wants to get on the bus while getting wet as little as possible. In order to get on the bus, the man has to be at the same point with the bus. You have to compute the least amount of rain that he can get hit by. All coordinates and velocities are measured in parsecs, and sizes of the man and the bus are measured in millimeters. A millimeter is much smaller than a parsec hence we can neglect all interaction between rain, the man and the bus at the beginning and at the moment of boarding.

Input

There are multiple tests. The number of tests doesn't exceed 10^5. Each test is described by a separate line and consists of 12 integers:

- c ($0 \le c \le 1000$) — amount of water in liters which falls on square millimeter per hour.
- rx, ry, rz ($-1000 \le rx, ry \le 1000$, $-1000 \le rz \le -1$) — three-dimensional vector of rain velocity measured in parsecs per hour.
- R ($0 \le R \le 1000$) — radius of the man's body in millimeters.
- hx, hy ($-1000 \le hx, hy \le 1000$) — initial coordinates of the man measured in parsecs.
- s ($0 \le s \le 1000$) — maximal man's velocity measured in parsecs per hour.
- bx, by ($-1000 \le bx, by \le 1000$) — initial coordiantes of the bus measured in parsecs.
- vx, vy ($-1000 \le vx, vy \le 1000$) — vector of bus' velocity measured in parsecs per hour.

Output

For each test print the answer in a separate line. Print -1 if it's impossible to reach the bus, otherwise print minimal amount of water in liters with at least 10^{-9} precision (relative or absolute).

Example

standard input	standard output
100 10 0 -30 10 0 0 10 300 0 -20 0	314159.2653589793
0 10 20 -30 15 0 0 10 10 10 0 10	-1
0 10 20 -30 15 0 0 10 10 -10 0 10	0.0000000000