Problem 3. Find the radio operator

Input file:	`standard input stream`
Output file:	`standard output stream`
Time limit:	1 second
Memory limit:	256 megabytes

Stierlitz is awaiting a new assistant — a radio operator girl about to be parachuted from a plane. But the pilots missed the spot in the pitch black night, and dropped the girl in the wrong spot. The only saving grace is that this spot is a point on a plane with integer coordinates... Stierlitz has no choice — he must find the girl. Crashing through thickets with a flashlight is not a becoming pastime for a Standartenfuerher, but alas, he has got no one to delegate it to. One of his deputies is enjoying a vacation, another one has hit the bottle, and the third one, albeit done with his vacation — and the bottle — is good for nothing. To cope with the challenge, Stierlitz has borrowed a radio tracker from Herr Schellenberg and is driving across the field, trying to pinpoint the poor girl.

The tracker device, the latest invention of the self-taught locksmith genius Polesov, works in the following way: the car stops in a point on the plane and directs the antenna in a certain direction, measuring the strength of the signal. If Stierlitz is standing in the same spot as the radio operator, the device reads -1 regardless of the direction. Otherwise, the device shows a signal level of $P \cos \varphi / R^2$ if $\varphi < 90$ degrees, and zero if $\varphi \geq 90$ degrees. Here φ is the angle between the vector of the antenna direction and the vector pointing from Stierlitz's car towards the radio operator, R is the distance from the car to the radio operator, and P is an unknown constant depending on the radio equipment.

Stierlitz must pinpoint the location of the radio operator with less than 10 bearings; more bearings will summon Mueller's boys from the competing organization.

Interaction Protocol

This is an interactive task, and instead of file input-output you will be working with a special program, called interactor. You will interact with this program using the standard input-output streams. To make a query, print the question mark into the standard output stream followed by four space-separated integers x_0, y_0, x_d, x_d, where x_0, y_0 are the coordinates of Stierlitz's car, and x_d, y_d are the components of the antenna direction vector ($|x_0|, |y_0|, |x_d|, |y_d| \leq 10^4$). The direction vector must be nonzero, i.e. $|x_d| + |y_d| > 0$.

In response to the standard input stream a single real number is sent: the power of the signal shown by the device. If this value equals -1, the program must be stopped immediately, since the radio operator has been found.

The coordinates of the radio operator are integers and do not exceed 10^3 in absolute value. The constant P is a real number between 1 and 10^6.

Make sure you print the end-of-line character and flush the output stream buffer (function `flush` of the programming language) after each printed query. Otherwise the solution can get Timeout response.

Example

For reading convenience, commands in the example are separated by lines with the minus symbol. Your program must **not** print any minuses.

standard input stream	standard output stream
- 0.035999999999999972799536 - 0.000000000000000000000000 - 0.008999999999999993199884 - 0.089999999999999827915431 - 0.166666666666666574148081 - -1	? 0 0 0 1 - ? -2 -3 -1 1 - ? -4 -3 0 100 - ? 3 0 3 1 - ? 4 0 0 1 - ? 4 3 1 1

Example explanation

In the sample, the radio operator girl is located at point (4, 3) and the constant P is 1.5. Notice that interactor computes the power of the signal using double precision and prints it with many decimal points.