

Cool Screensaver (screensaver)

Erfan has been coding all day long and he was about to go to bed, but he was so tired that he just took a little nap in front of his computer. Waking up, he now realizes that his computer is still on and his screensaver is playing.

The screensaver is displaying a red square and a blue square moving on a black background. Both squares are aligned with the borders of his monitor and respectively have a side of S_R and S_B pixels. The red square is moving on the screen with a speed of (vx_R, vy_R) pixels per second, while the blue square is moving with a speed of (vx_B, vy_B) pixels per second.

When Erfan woke up at time $t = 0$, the bottom left corner of the red square was at coordinates (x_R, y_R) and the bottom left corner of the blue square was at coordinates (x_B, y_B) , where $(0, 0)$ are the coordinates of the center of the screen (his screen is very large).

Erfan really likes the screensaver, but what he likes most is seeing the two squares overlap and produce a purple shape. He is now wondering at what time $t \geq 0$ the purple shape will have maximum area. Help him find this time, so that he can quickly decide whether to go to bed or stay awake a little longer to enjoy the show.

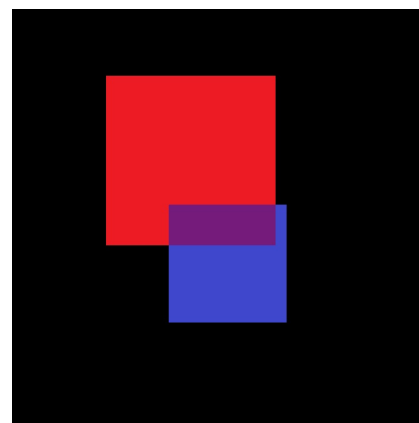


Figure 1: Made with Paint.

Input

The first line contains an integer T , the number of test cases.

Each of the following T lines contains 10 integers describing a test case: $x_R, y_R, S_R, vx_R, vy_R, x_B, y_B, S_B, vx_B, vy_B$, respectively, the initial coordinates of the bottom left corner, the size and the speed of the red and the blue square.

Output

You should output T lines. The i -th line should contain a single real number: the time at which the purple shape will have maximum area in the i -th test case.

Your answer for each test case will be considered correct if its absolute or relative error does not exceed 10^{-3} . If there are multiple answers, you can output any of them. Formally: let t be your answer, then your answer will be considered correct if there exists any t^* such that the purple shape has maximum area at time t^* and $\frac{|t-t^*|}{\max(1, |t^*|)} \leq 10^{-3}$.

Constraints

- $1 \leq T \leq 10^5$.
- $-10^3 \leq x_R, y_R, vx_R, vy_R, x_B, y_B, vx_B, vy_B \leq 10^3$.
- $1 \leq S_R, S_B \leq 10^3$.

Examples

input	output
2 -1 -1 3 2 2 3 1 2 -1 -1 -1 -1 3 -2 -2 3 1 2 1 1	0.833 0.000

Explanation

In the first test case, the maximum area is 2.25.

In the second test case, the two squares never overlap for $t \geq 0$, therefore the maximum area is 0. Any time $t > 0$ would also be a correct answer.