Two circles are living in an infinite plane. They move in straight lines without thinking about the risk of a collision. At a time t> = 0 each circle will be in position (X + speed\_X \* t, Y + speed\_Y \* t) depending on its initial parameters. We will consider that the two circles are colliding if the distance between them dist <= R1 + R2. Your task is to make a program that checks whether two objects will collide.

**Note:**

If at first the two objects intersect or touch we will consider that the time to the collision is 0.

**Input**

The first two rows of the file collision.in will contain five numbers , the first two will be the coordinates of the centers of the circle, after that you will receive radius and the speed of the circle relative to the X-axis and speed of the circle relative to the Y-axis.

**Output**

In the output file collision.out print one number corresponding to the time to the moment of the collision. If the circles will never collide then you must print -1.

The answer must be printed with four digits accuracy after the decimal point.

**Constraints**

The numbers in the file will be written with up to six characters accuracy.

**Time limit: 0.5 sec**

**Memory limit: 256 MB**

**Example test**

|  |  |
| --- | --- |
| **Input (collision.in)** | **Output (collision.out)** |
| 1 1 1 0 500 0 5 0 -50 | 0.0000 |
| -10 0 1 2 110 0 1 -2 1 | 4.5000 |
| -10 0 1 -2 110 0 1 2 1 | -1 |