A ground-to-air radar system uses an antenna that rotates in a horizontal plane with a period of 2 seconds. Whenever the antenna faces an object, its distance from that antenna is measured and displayed on a circular screen as a white dot. The distance from the dot to the centre of the screen is proportional to the horizontal distance from the antenna to the object, and the angle of the line passing through the centre and the dot represents the direction of the object from the antenna. A dot directly above the centre represents an object that is north of the antenna; an object to the right of the centre represents an object to the east, and so on. The antenna rotates clockwise; that is, if it points north at time $t = 0.0$, it points east at $t = 0.5$, south at $t = 1.0$, west at $t = 1.5$, north at $t = 2$, and so on. If the object is directly on top of the radar antenna, it cannot be observed.

There are a number of objects in the sky. Each is moving at a constant velocity, and appears as a dot on the screen that appears in a different position every time the antenna observes it. Your task is to determine where the dot will appear on the screen the next time the antenna observes it, given the previous two observations. If there are several possibilities, you are to find them all.

Input

The input consists of a number of lines, each with four real numbers: a_1, d_1, a_2, d_2. a_1, d_1 are the angle (in degrees) and distance (in arbitrary distance units) for the first observation while a_2, d_2 are the angle and distance for the second observation.

Output

The output consists of one line per line of input, containing all posible solutions sorted by ascending angle value and then by descending distance value; each solution consists of two real numbers (with two digits after the decimal place) indicating a_3, d_3, the angle and distance for the next observation.

Sample Input

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90.0 100.0 90.0 110.0
90.0 100.0 270.0 10.0
90.0 100.0 180.0 50.0
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Sample Output

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90.00 120.00
270.00 230.00 270.00 83.33
199.93 64.96 223.39 130.49
```