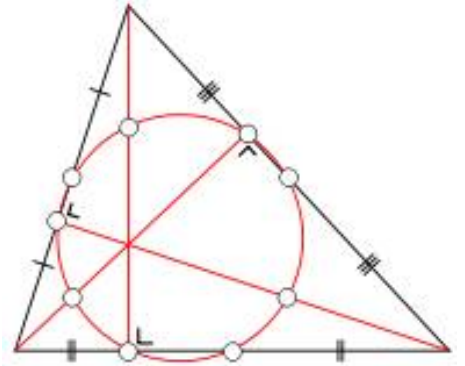


## 12302 Nine-Point Circle

In geometry, the nine-point circle is a circle that can be constructed for any given triangle. It is so named because it passes through nine significant points defined from the triangle. These nine points are:

- The midpoint of each side of the triangle
- The foot of each altitude
- The midpoint of the line segment from each vertex of the triangle to the orthocenter (where the three altitudes meet; these line segments lie on their respective altitudes).



The nine-point circle is also known as Feuerbach's circle, Euler's circle, Terquem's circle, the six-point circle, the twelve-point circle, the  $n$ -point circle, the medioscribed circle, the mid circle or the circum-midcircle.

Given three non-collinear points A, B and C, you're to calculate the center position and radius of triangle ABC's nine-point circle.

### Input

There will be at most 100 test cases. Each case contains 6 integers  $x_1, y_1, x_2, y_2, x_3, y_3$  ( $0 \leq x_1, y_1, x_2, y_2, x_3, y_3 \leq 1000$ ), the coordinates of A, B and C. The last test case is followed by a line with six '-1', which should not be processed.

### Output

For each test case, print three real numbers  $x, y, r$ , indicating that the nine point circle is centered at  $(x, y)$ , with radius  $r$ . The numbers should be rounded to six decimal places.

### Sample Input

```
0 0 10 0 3 4
-1 -1 -1 -1 -1 -1
```

### Sample Output

```
4.000000 2.312500 2.519456
```