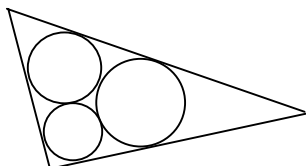
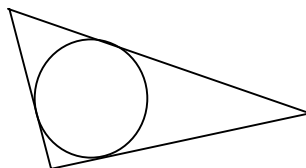


## Problem 9: Circles

Suppose you are given the radius for each of three circles that are tangent to each other. Assume a triangle is then drawn with each of its sides is tangent to exactly two of the circles. The figure below illustrates one such possible set of circles and the triangle.



This triangle can be inscribed with a single circle which is tangent to all three sides, as shown below.



What is the radius of this inscribed circle?

### Input

The input will contain multiple cases. For each case the input will contain three positive, non-zero, real numbers less than or equal to 100.0 giving the radii of the three circles. You may assume that these values are such that the construction of the triangle is possible. The last case will be followed by three negative real numbers.

### Output

For each case, display the case number (they start with 1 and increase sequentially), and the radius of the inscribed circle with three fractional digits. Separate the output for consecutive cases with a blank line.

### Sample Input

```
1.0 1.0 1.0
1.0 1.5 2.0
100.0 100.0 90.0
-1.0 -1.0 -1.0
```

### Output for the Sample Input

```
Case 1: radius = 1.577
Case 2: radius = 2.283
Case 3: radius = 152.308
```