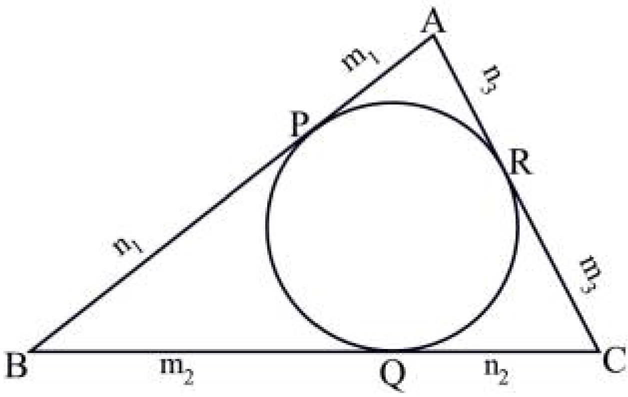
In-circle of a triangle is the circle that touches all the three sides of the triangle internally. The center of the in-circle of a triangle happens to be the common intersection point of the three bisectors of the internal angles. In this problem you will not be asked to find the in-circle of a triangle, but will be asked to do the opposite!!



You can see in the figure above that the in-circle of triangle ABC touches the sides AB, BC and CA at point P, Q and R respectively and P, Q and R divides AB, BC and CA in ratio m_1:n_1, m_2:n_2 and m_3:n_3 respectively. Given these ratios and the value of the radius of in-circle, you have to find the area of triangle ABC.

Input

First line of the input file contains an integer N ($0 < N < 50001$), which denotes how many input sets are to follow. The description of each set is given below.

Each set consists of four lines. The first line contains a floating-point number r ($1 < r < 5000$), which denotes the radius of the in-circle. Each of the next three lines contains two floating-point numbers, which denote the values of m_1, n_1, m_2, n_2, m_3 and n_3 ($1 < m_1, n_1, m_2, n_2, m_3, n_3 < 50000$) respectively.

Output

For each set of input produce one line of output. This line contains a floating-point number that denotes the area of the triangle ABC. This floating-point number should contain four digits after the decimal point. Errors less than $5 * 10^{-3}$ will be ignored. Use double-precision floating-point number for calculation.

Sample Input

```
2
140.9500536497
15.3010457320 550.3704847907
464.9681681852 65.9737378230
55.0132446384 10.7791711946
208.2835101182
145.7725891419 8.8264176452
7.6610997600 436.1911036207
483.6031801012 140.2797089713
```

Sample Output

```
400156.4075
908824.1322
```