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1  /***** Vector geometry *****/
2  #include <bits/stdc++.h>
3  using namespace std;
4
5  struct Pt {
6      double x, y, z;
7      Pt(double a = 0, double b = 0, double c = 0):
8          x(a), y(b), z(c) {}
9
10     Pt operator-(const Pt &a) const {
11         Pt ret;
12         ret.x = x - a.x;
13         ret.y = y - a.y;
14         ret.z = z - a.z;
15         return ret;
16     }
17 };
18 double dist(Pt a, Pt b) {
19     return hypot(a.x - b.x, a.y - b.y);
20 }
21 double length(Pt a) {
22     return hypot(a.x, a.y);
23 }
24 double dot(Pt a, Pt b) {
25     return a.x * b.x + a.y * b.y;
26 }
27 Pt cross2(Pt b, Pt c) {
28     return Pt(b.y * c.z - c.y * b.z, b.z * c.x - c.z
29 * b.x, b.x * c.y);
30 }
31 double cross(Pt o, Pt a, Pt b) {
32     return (a.x - o.x) * (b.y - o.y) -
33 (a.y - o.y) * (b.x - o.x);
34 }
35 double angle(Pt a, Pt b) {
36     return acos(dot(a, b) / length(a) / length(b));
37 }
38 Pt rotateRadian(Pt a, double radian) {
39     double x, y;
40     x = a.x * cos(radian) - a.y * sin(radian);
41     y = a.x * sin(radian) + a.y * cos(radian);
42     return Pt(x, y);
43 }
44 Pt getIntersection(Pt p, Pt l1, Pt q, Pt l2) {
45     double a1, a2, b1, b2, c1, c2;
46     double dx, dy, d;
47     a1 = l1.y, b1 = -l1.x, c1 = a1 * p.x + b1 * p.y;
48     a2 = l2.y, b2 = -l2.x, c2 = a2 * q.x + b2 * q.y;
49     d = a1 * b2 - a2 * b1;
50     dx = b2 * c1 - b1 * c2;
51     dy = a1 * c2 - a2 * c1;
52     return Pt(dx / d, dy / d);
53 }
54 Pt solve(Pt A, Pt B, Pt C) {
55     double radABC = angle(A - B, C - B); //getting
angle ABC
56     double radACB = angle(A - C, B - C); //getting
angle ACB
57     Pt vB = rotateRadian(C - B, radABC / 3); //getting
the line BD for angle CBD
58     Pt vC = rotateRadian(B - C, -radACB
/ 3); //getting the line CD for angle BCD
59     return getIntersection(B, vB, C, vC);
60 }

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61  int main() {
62      int a,b,c,d,e,i,j,T;
63      scanf("%d",&T);
64      for(i=1;i<=T;i++) {
65
66          Pt A, B, C, D, E, F;
67          scanf("%lf %lf",&A.x, &A.y);
68          scanf("%lf %lf",&B.x, &B.y);
69          scanf("%lf %lf",&C.x, &C.y);
70          D = solve(A, B, C);
71          E = solve(B, C, A);
72          F = solve(C, A, B);
73          printf("%lf %lf %lf %lf %lf %lf\n", D.x,
D.y, E.x, E.y, F.x, F.y);
74      }
75      return 0;
76  }

```