

# Problem K

## Overlapping Triangles

Time limit: 3 seconds

Given two triangles, what is the overlapping area? A triangle is represented by three points  $(x_1, y_1)$ ,  $(x_2, y_2)$ , and  $(x_3, y_3)$ . For example, two triangles are represented as  $(1, 1)$ ,  $(1, 2)$ ,  $(2, 1)$ , and  $(1, 1)$ ,  $(1, 2)$ ,  $(2, 2)$ . The overlapping area forms a triangle  $(1, 1)$ ,  $(1, 2)$ ,  $(3/2, 3/2)$  with area  $1/4$ . Be careful that degenerate triangles are also taken as a valid one, such as  $(1, 1)$ ,  $(1, 1)$ ,  $(1, 2)$ .

## Technical Specification

1.  $1 \leq x_1, y_1, x_2, y_2, x_3, y_3 \leq 32$
2.  $1 \leq T \leq 80$

## Input Format

The first line contains an integer  $T (\leq 80)$  representing the number of test cases. For each test case, there are 2 triangles  $A$  and  $B$ . The coordinates of triangles  $A$  and  $B$  are listed orderly in a line. For each triangle, there are 6 integers  $x_1, y_1, x_2, y_2, x_3$ , and  $y_3$ .

## Output Format

For each test case, please output the overlapping area  $ans$ . If  $ans$  is an integer, please output the integer value. Otherwise, please output  $ans$  as the irreducible fraction  $n/d$ . Be careful that during the calculation of  $n$  or  $d$ , some value may be greater than  $2^{64}$ .

## Sample Input

```
4
1 1 1 1 1 2 1 1 1 2 2 2
1 1 1 2 2 1 1 1 1 2 2 2
1 1 1 2 2 1 2 2 2 3 3 2
2 2 2 4 4 2 3 3 3 2 2 3
```

## Sample Output for the Sample Input

0  
1/4  
0  
1/2