Problem I. Linear Fractional Transformation

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

The linear fractional transformations are the functions $f(z) = \frac{az+b}{cz+d}$ $(a, b, c, d \in \mathbb{C}, ad - bc \neq 0)$ mapping the extended complex plane $\mathbb{C} \cup \{\infty\}$ onto itself.

Given $f(z_1) = w_1$, $f(z_2) = w_2$ and $f(z_3) = w_3$, where z_1, z_2 and z_3 are pairwise distinct complex numbers and w_1, w_2 and w_3 are also pairwise distinct complex numbers, your task is to calculate $f(z_0)$ for a certain complex number z_0. It can be shown that the answer is always unique to the given contraints.

Input

The input contains several test cases, and the first line contains an integer T $(1 \leq T \leq 10^5)$, indicating the number of test cases.

To clarify the input format, we denote $z_0 = p_0 + q_0 i$, $z_1 = p_1 + q_1 i$, $z_2 = p_2 + q_2 i$, $z_3 = p_3 + q_3 i$, $w_1 = r_1 + s_1 i$, $w_2 = r_2 + s_2 i$ and $w_3 = r_3 + s_3 i$, where i is the imaginary unit that $i^2 = -1$.

Then for each test case, the first line contains four integers p_1, q_1, r_1 and s_1, the second contains four integers p_2, q_2, r_2 and s_2, the third line contains four integers p_3, q_3, r_3 and s_3, and the fourth line contains only two integers p_0 and q_0. It is guaranteed that all these integers are in the range $[-100, 100]$ and the answer $f(z_0)$ satisfies $|f(z_0)| < 10^6$, where $|z| = |p + qi| = \sqrt{p^2 + q^2}$ $(p, q \in \mathbb{R})$ is the modulus of the complex number z.

Output

For each test case, output a line containing two real numbers c_0 and d_0, indicating the real part and the imaginary part of $f(z_0)$.

Your answer is acceptable if the absolute or relative errors of both the real part and the imaginary part do not exceed 10^{-6}. Formally speaking, suppose that your output is x and the jury's answer is y, your output is accepted if and only if $\frac{|x-y|}{\max(1,|y|)} \leq 10^{-6}$.

Example

standard input	standard output
2 -1 0 0 -1 0 1 -1 0 1 0 0 1 0 -1 -1 0 -1 0 0 1 0 -1 1 0 1 0 0 -1	1.000000000000000 0.000000000000000 0.000000000000000 1.000000000000000

Note

In the first sample case we have $f(z) = iz$, and in the second sample case we have $f(z) = 1/z$.