

Overview: Compute the unique real root of a cubic polynomial

Description: Natasha Romanova, aka the Black Widow, is famous for being one of the best spies in the entire world. But what few people know is that aside from being better at martial arts than Bruce Lee, the Black Widow is also a formidable mathematician and physicist. How else has she been able to predict her opponents' attacks and take out an entire room of Russian interrogators in two minutes flat?

Anyways, one of Natasha's latest maneuvers requires her to compute the roots of cubic polynomials. With power-hungry gods trying to take over the world, however, she simply doesn't have the time to manually find these roots. Fortunately, she has enlisted your help! Luckily for you, all the polynomials that will be given to you have only one unique real root. Can you help the Natasha develop her latest martial arts move?

Filename: adv53.{java, cpp, c, cc, py}

Input: The first line will contain an integer T , the number of test cases in the program.

T lines will follow. Each line contains four real numbers, a , b , c , and d , representing the polynomial ax^3+bx^2+cx+d .

Output: For each polynomial, given that the real root has answer x , output the integer part of the absolute value of $1000000x$.

Assumptions: All real numbers will have magnitude no larger than 10.
 a will have magnitude at least 1.
All cubic polynomials in the input will have exactly one real root.
The absolute value of $1000000x$ will not be within 0.1 of an integer.

Sample
Input #1: 2
1 0 0 2
1 0 0 -2

Sample
Output #1: 1259921
1259921