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Practice problems aimed to improve your coding skills.

-  PRACTICE-02_SCAN-PRINT
-  PRACTICE-03_TYPES
-  LAB-PRAC-02_SCAN-PRINT
-  LAB-PRAC-01
-  PRACTICE-04_COND
-  BONUS-PRAC-02
-  LAB-PRAC-03_TYPES
 -  FIFA Fever
 -  Matrix Math
 -  The Tale of Three Lines
 -  Fiery FIFA Fever
 -  The Final Rational
 -  Quadratic Quandary
 -  FIFA Fractions
 -  Digit Dilemma
 -  Recursive Recharge
 -  Breaking the Lego Safe
 -  The Final Rational Revisited
 -  Developing an interest in interest
-  PRACTICE-05_COND-LOOPS
-  LAB-PRAC-04_COND
-  LAB-PRAC-05_CONDLLOOPS
-  PRACTICE-07_LOOPS-ARR
-  LAB-PRAC-06_LOOPS
-  LAB-PRAC-07_LOOPS-ARR
-  LABEXAM-PRAC-01_MIDSEM
-  PRACTICE-09_PTR-MAT
-  LAB-PRAC-08_ARR-STR
-  PRACTICE-10_MAT-FUN
-  LAB-PRAC-09_PTR-MAT
-  LAB-PRAC-10_MAT-FUN
-  PRACTICE-11_FUN-PTR
-  LAB-PRAC-11_FUN-PTR
-  LAB-PRAC-12_FUN-STRUC
-  LABEXAM-PRAC-02_ENDSEM
-  LAB-PRAC-13_STRUC-NUM
-  LAB-PRAC-14_SORT-MISC

Quadratic Quandary

LAB-PRAC-03_TYPES

Quadratic Quandary [20 marks]

Problem Statement

You will be given a **quadratic equation with integer coefficients** which is guaranteed to have real roots (maybe repeated) in the following form.

$$ax^2 + bx + c = 0$$

You need to compute the following four quantities with respect to the given quadratic equation

1. The discriminant of the quadratic equation
2. The point where the quadratic curve described by the equation attains its maximum or minimum i.e. if $a > 0$, find the point where the curve attains its minimum and if $a < 0$, find the point where the curve attains its maximum.
3. Sum of the two roots of the equation
4. Absolute difference of the two roots of the equation

Print each result on a different line. Print each result **correct to three decimal places**.

Caution

1. Be careful about extra/missing lines and extra/missing spaces.
2. Give all four numbers on different lines.
3. Print all results correct only to three decimal places.
4. The quadratic equation we give you will always have real roots but may have repeated roots
5. The equation will have integer coefficients but the roots, determinant etc may be non-integer.

Hint: The math.h library has been included for you. Use the fabs(x) function to calculate the absolute value of a float/double variable x. Use sqrt(x) to calculate the square root of a float or double variable x. Use the notation %0.3f or the shorthand %.3f to print a float/double variable correct to three decimal places.

INPUT:

$$ax^2 + bx + c = 0$$

where a, b, c are integers and a is non-zero.

OUTPUT:

Discriminant: D

Extremum: E

Sum: R1 + R2

Difference: |R1-R2|

EXAMPLE:

INPUT

$$1x^2 + 2x + -6 = 0$$

OUTPUT:

Discriminant: 28.00

Extremum: -1.00

Sum: -2.00

Difference: 5.29

Grading Scheme:

Total marks: **[20 Points]**

There will be partial grading in this question. There are four lines in your output. Giving correct output in each line carries 25% of the marks. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases. Ensure that there are no missing/extra spaces or missing/extra lines in your output.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

 **Start Solving! (/editor/practice/6023)**