Java → Basic syntax and simple programs → Control flow statements → The for-loop

The for-loop → The roots of an equation

■ Medium © 13 minutes ②

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Your task is to find the roots of a <u>cubic equation</u>.

The input contains four numbers: a, b, c, d.

Output all the integer roots between 0 and 1000 (inclusive) for the equation $ax^3 + bx^2 + cx + d = 0$ in ascending order.

If the specified interval does not contain the roots of the equation, do not output anything.

Remember, that cubic equation always has 3 roots, meaning it can't have more than 3 integer roots. Keep this in mind in order to optimize the code.

Report a typo

Sample Input 1:

```
-1
1
-1
1
```

Sample Output 1:

1

Sample Input 2:

```
0
1
-6
5
```

Sample Output 2:

```
1
5
```

Sample Input 3:

```
1
1
1
1
```

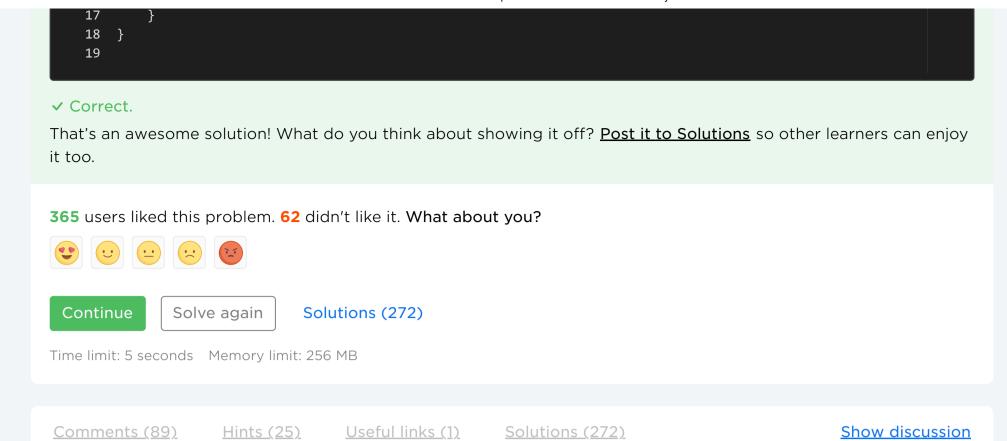
Sample Output 3:

√ Write a program

Code Editor IDE

```
Java
1 import java.util.Scanner;
   class Main {
2
       public static void main(String[] args) {
            Scanner scanner = new Scanner(System.in);
5
6
            int a = scanner.nextInt();
            int b = scanner.nextInt();
8
            int c = scanner.nextInt();
9
            int d = scanner.nextInt();
10
            for (int i = 0; i <= 1000; i++) {
11
                if (a * i * i * i + b * i * i + c * i + d == 0) {
12
13
                    System.out.println(i);
14
15
16
            scanner.close();
```

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