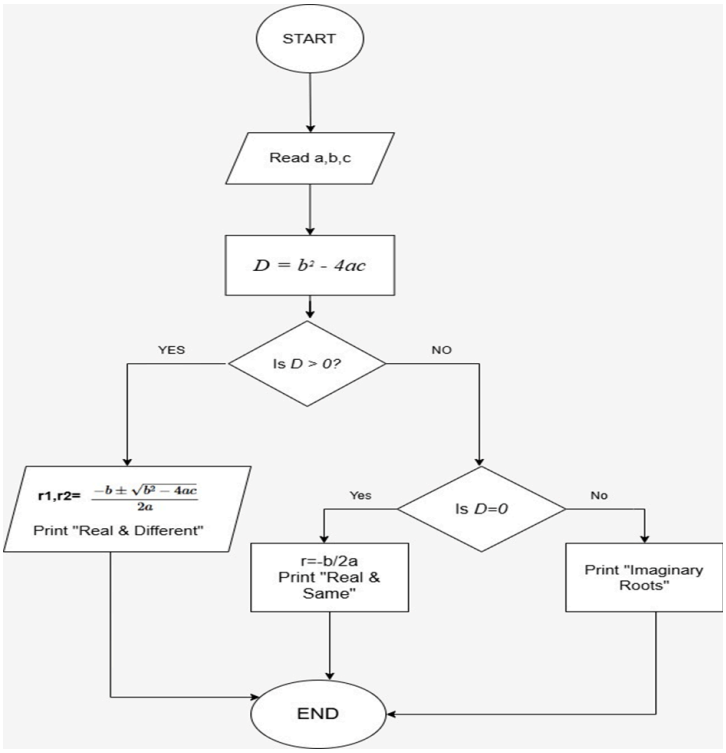
```
Step 1: START
Step 2: INPUT coefficients a, b, c (as integers)
Step 3: CALCULATE discriminant D = b² - 4ac
Step 4: CHECK the value of D:
Step 5:   IF D > 0:
Step 6:     CALCULATE root1 = (-b + √D) / (2a)
Step 7:     CALCULATE root2 = (-b - √D) / (2a)
Step 8:     OUTPUT root1 and root2 (2 decimal places)
Step 9:   ELSE IF D = 0:
Step 10:    CALCULATE root = -b / (2a)
Step 11:    OUTPUT root1 = root2 = root (2 decimal places)
Step 12:  ELSE (D < 0):
Step 13:    CALCULATE real_part = -b / (2a)
Step 14:    CALCULATE imaginary_part = √(-D) / (2a)
Step 15:    OUTPUT root1 and root2 in complex form (2 decimal places)
Step 16: STOP
```



2.1.1. Roots of a Quadratic Equation

28:20

Write a program to find the roots of a quadratic equation, given its coefficients a, b, and c. Use the quadratic formula: $\frac{\left(-b \pm \sqrt{b^2 - 4ac}\right)}{2a}$

The discriminant $D = b^2 - 4ac$ determines the nature of the roots:

- If $D > 0$: Roots are real and different
- If $D = 0$: Roots are real and the same
- If $D < 0$: Roots are imaginary

Input Format:

- Three space-separated integers representing the coefficients a, b, and c, respectively.

Output Format:

- If roots are real and different, print:

```
root1 = <Root1>
root2 = <Root2>
```

- If roots are the same, print:

```
root1 = root2 = <Root1>
```

- If roots are imaginary, print:

Sample Test Cases +

Explorer

quadratic...

Submit

```
1  import math
2  a,b,c = map(int, input().split())
3  d=b**2-4*a*c
4  if d>0:
5      r1=(-b + math.sqrt(d))/(2*a)
6      r2=(-b - math.sqrt(d))/(2*a)
7      print("root1 = %.2f" % r1)
8      print("root2 = %.2f" % r2)
9  elif d==0:
10     r=-b/(2*a)
11     print("root1 = root2 = %.2f" % r)
12 else:
```

Debugger

Average time: 0.005 s (4.83 ms)

Maximum time: 0.007 s (7.00 ms)

3 out of 3 shown test case(s) passed

3 out of 3 hidden test case(s) passed

Test case 1 6 ms — Debug

Expected output	Actual output
1 -5 6	1 -5 6
root1 = 3.00	root1 = 3.00
root2 = 2.00	root2 = 2.00

Test case 2 7 ms

Terminal | Test cases

< Prev | Reset | Submit | Next >