

Experiment 2.1.1

Roots of an experiment

Algorithm : Step 1 : Start.

Step 2 : Read three space-separated integers a, b, and c.

Step 3 : Calculate the discriminant.

$D = b^2 - 4ac$

Step 4 : Check the value of the discriminant .

- Case1: If $D > 0$ (Real and different roots)

Print: root1, root2.

- Case 2: If $D == 0$ (Real and same roots)

Print : root1=root2.

- Case 3: If $D < 0$ (Imaginary roots)

Print : Root = root 1 + imaginary

Root = root 2 + imaginary Step 5 :

Stop.

Code:

```
a, b, c = map(float, input().split())
```

```
D = (b*b) - (4*a*c)
sqrD
```

```
= D ** 0.5
```

```
if D > 0:
```

```
    root1 = (-b + sqrD) / (2*a)
```

```
    root2 = (-b - sqrD) / (2*a)
```

```
    print("root1 = " f"{root1:.2f}")
```

```
    print("root2 = " f"{root2:.2f}") elif D
```

```
    == 0:
```

```

root1 = root2 = -b / (2*a)
print("root1 = root2 = " f"{root1:.2f}")

else:
    real = (-b) / (2*a)    imaginary = sqrD /
(2*a)    print(f"root1 =
{real:.2f}+{imaginary:.2f}i")    print(f"root2 =
{real:.2f}-{imaginary:.2f}i")

```

CODETANTRA Home

Support Logout

2.1.1. Roots of a Quadratic Equation

38/15

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

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
```

quadratic...

Submit

```

1 a, b, c = map(int, input().split())
2 d = b*b - 4*a*c
3 sqrt = d**0.5
4 if d > 0:
5     root1 = (-b + sqrt) / (2*a)
6     root2 = (-b - sqrt) / (2*a)
7     print(f"root1 = {root1:.2f}")
8     print(f"root2 = {root2:.2f}")
9 elif d == 0:
10    root = -b / (2*a)
11    print(f"root1 = root2 = {root:.2f}")

```

Average time: 0.006 s

Maximum time: 0.010 s

6.50 ms

10.00 ms

3 out of 3 shown test case(s) passed

3 out of 3 hidden test case(s) passed

Test case 1 6 ms

Expected output: 1 -5.6

Actual output: 1 -5.6

Test case 2 6 ms

Expected output: root1 = 3.00
root2 = 2.00

Actual output: root1 = 3.00
root2 = 2.00

Terminal

Test Cases

< Prev

Reset

Submit

Next >

FlowChart:

S

