

Write a program to find roots of a quadratic equation

Description

Get the values of a, b and c (coefficients of quadratic equation) as input from the user and calculate the roots and print as the output.

Input

Enter the value of a, b and c: 1 -6 9

Output

Roots are equal

Root 1= root 2 = 3.00

C Program

```
#include<stdio.h>
#include<math.h>
int main() {
    double a, b, c, d, root1, root2, r, i;
    printf("Enter value of a, b and c: ");
    scanf("%lf%lf%lf", &a, &b, &c);
    d = b * b - 4 * a * c;
    if (d > 0) {
        printf("There are two Real Roots\n");
        root1 = (-b + sqrt(d)) / (2 * a);
        root2 = (-b - sqrt(d)) / (2 * a);
        printf("root1= %.2lf \n root2= %.2lf", root1, root2);
    }
    else if (d == 0) {
        printf("Roots are equal\n");
        root1 = root2 = -b / (2 * a);
        printf("root1=root2= %.2lf;", root1);
    }
}
```

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```
}  
else {  
    r = -b / (2 * a);  
    i = sqrt(-d) / (2 * a);  
    printf("No Real Roots\n");  
    printf("root1=%.2lf+%.2lfi \nroot2=%.2f-%.2fi", r, i, r, i);  
}  
return 0;  
}
```



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C++ Program

```
#include <iostream>

using namespace std;

#include <math.h>

int main() {

    double a, b, c, d, root1, root2, real, imag;

    cout << "Enter value of a, b and c: ";

    cin >> a >> b >> c;

    d = b * b - 4 * a * c;

    if (d > 0) {

        cout << "There are two Real Roots\n";

        root1 = (-b + sqrt(d)) / (2 * a);

        root2 = (-b - sqrt(d)) / (2 * a);

        cout << "root1 = " << root1 << "root2 = " << root2;

    }

    else if (d == 0) {

        cout << "Roots are equal\n";

        root1 = root2 = -b / (2 * a);

        cout << "root1 = root2 = " << root1;

    }

    else {

        real = -b / (2 * a);

        imag = sqrt(-d) / (2 * a);

        cout << "No Real Roots\n";

        cout << "root1 = " << real << "+" << imag << " root2 = " << real << "-" << imag;

    }

    return 0;

}
```

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Java

```
import java.util.Scanner;

import java.io.*;

public class Main {

    public static void main(String[] args) {

        Scanner sc= new Scanner(System.in);

        double a,b,c;

        System.out.println("Enter the values for a, b and c: ");

        a = sc.nextDouble();

        b = sc.nextDouble();

        c = sc.nextDouble();

        double d = Math.pow(b,2) - 4*a*c;

        if(d>0){

            System.out.println("There are two real roots");

            System.out.println("Roots are " + (-b+Math.sqrt(d))/(2*a) + " and " + (-b-Math.sqrt(d))/(2*a));

        }

        else if (d == 0){

            System.out.println("Roots are equal");

            System.out.println("Roots are " + -b/(2*a));

        }

        else{

            System.out.println("No real roots");

            System.out.println("Roots are " + -b/(2*a) + "+i" +

                Math.sqrt(-d)/(2*a) + " and "

                + -b/(2*a) + "-i" + Math.sqrt(-d)/(2*a));

        }

    }

}
```

Python

```
import math

a = int(input('Enter value for a:'))
b = int(input('Enter value for b:'))
c = int(input('Enter value for c:'))

if a == 0:
    print("a cannot be zero")
else:
    d = b**2 - 4 * a * c
    root = math.sqrt(abs(d))
    if d > 0:
        print("Two Real Roots")
        print((-b + root)/(2 * a))
        print((-b - root)/(2 * a))
    elif d == 0:
        print("Roots are equal")
        print(-b / (2*a))
    else:
        print("No Real Root")
        print(- b / (2*a) , " + i", root)
        print(- b / (2*a) , " - i", root)
```

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