

PROGRAM 1

Write a java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and use the quadratic formula.

```
import static java.lang.Math.*;
import java.util.Scanner;
public class Quadratic
{
    public static void main(String args[])
    {
        int a,b,c;
        System.out.print("Enter the Value of a: ");
        Scanner s1 = new Scanner(System.in);
        a=s1.nextInt();
        System.out.print("Enter the Value of b: ");
        b=s1.nextInt();
        System.out.print("Enter the Value of c: ");
        c=s1.nextInt();
        if (a == 0)
        {
            System.out.println("Invalid");
        }
        else
        {
            int d = b * b - 4 * a * c;
            double sqrt_val = sqrt(abs(d));
            if (d>0)
            {
                System.out.println("Roots are real and different");
                System.out.println((double)(-b + sqrt_val) / (2 * a) + "\n" +
                    (double)(-b - sqrt_val) / (2 * a));
            }
            else if (d == 0)
            {
                System.out.println("Roots are real and same");
                System.out.println(-(double)b / (2 * a) + "\n" + -(double)b / (2 * a));
            }
            else
            {
                System.out.println("Roots are complex");
                System.out.println(-(double)b / (2 * a) + "+i" + sqrt_val / (2 * a) + "\n" + -
                    (double)b / (2 * a) + "-i" + sqrt_val / (2 * a));
            }
        }
    }
}
```