

```

import java.util.*;
import java.util.Scanner;
import java.lang.Math;

public class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter value of a: ");
        int a = Integer.parseInt(scanner.nextLine());
        System.out.print("Enter value of b: ");
        int b = Integer.parseInt(scanner.nextLine());
        System.out.print("Enter value of c: ");
        int c = Integer.parseInt(scanner.nextLine());
        Quadratic quadratic = new Quadratic(a, b, c);
        quadratic.Roots();
        scanner.close();
    }
}

class Quadratic {
    int a, b, c, d;

    Quadratic(int a, int b, int c) {
        this.a = a;
        this.b = b;
        this.c = c;
        this.d = (b * b) - (4 * a * c);
    }

    public void Roots() {
        if (d > 0) {
            System.out.println("Roots are real and distinct");
            double root1 = (-b + Math.sqrt(d)) / (2 * a);
            double root2 = (-b - Math.sqrt(d)) / (2 * a);
            System.out.println("Roots are: " + root1 + " and " + root2);
        } else if (d == 0) {
            System.out.println("Roots are real and equal");
            double root = -b / (2 * a);
            System.out.println("Root is: " + root);
        } else {
            System.out.println("Roots are imaginary");
        }
    }
}

```

```
C:\Users\Admin\Desktop>java Quadratic.java
```

```
Enter value of a: 4
```

```
Enter value of b: 1
```

```
Enter value of c: 1
```

```
Roots are imaginary
```

```
Roots are: NaN and NaN
```

```
C:\Users\Admin\Desktop>java Quadratic.java
```

```
Enter value of a: 1
```

```
Enter value of b: 4
```

```
Enter value of c: 4
```

```
Roots are real and equal
```

```
Root is: -2.0
```

```
C:\Users\Admin\Desktop>java Quadratic.java
```

```
Enter value of a: 1
```

```
Enter value of b: 4
```

```
Enter value of c: 2
```

```
Roots are real and distinct
```

```
Roots are: -0.5857864376269049 and -3.414213562373095
```

```
C:\Users\Admin\Desktop>AADIT TOMAR (1BM23CS001) _
```