

```
import java.util.*;
```

```
class quadratic
{
    int a,b,c;
    double d,r1,r2;
    void check(int x,int y, int z)
    {
        a=x;
        b=y;
        c=z;
        d=((b*b)-(4*a*c));
        if(d>0)
        {
            System.out.println("The roots are real and distinct!");
            r1=(-b+Math.sqrt(d))/(2*a);
            r2=(-b-Math.sqrt(d))/(2*a);
            System.out.println("The roots are: "+r1+" and "+r2);
        }
        if(d<0)
        {
            System.out.println("The roots are imaginary!");
            r1=(-b+Math.sqrt(Math.abs(d)))/(2*a);
            r2=(-b-Math.sqrt(Math.abs(d)))/(2*a);
            System.out.println("The roots are: "+r1+" and "+r2);
        }
        if(d==0)
        {
            System.out.println("The roots are real and equal!");
            r1=(-b)/(2*a);
            r2=(-b)/(2*a);
            System.out.println("The roots are: "+r1+" and "+r2);
        }
    }
}
```

```
class TestQuad
{
    public static void main(String args[])
    {
        quadratic ob=new quadratic();
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the values of quadratic coefficients a, b, c:");
        ob.a=sc.nextInt();
        ob.b=sc.nextInt();
        ob.c=sc.nextInt();
        ob.check(ob.a,ob.b,ob.c);
    }
}
```

```
C:\Users\bmsce\Documents\USN_113_java>javac LabProg1.java
```

```
C:\Users\bmsce\Documents\USN_113_java>java TestQuad
```

```
Enter the values of quadratic coefficients a, b, c:
```

```
1 2 1
```

```
The roots are real and equal!
```

```
The roots are: -1.0 and -1.0
```

```
C:\Users\bmsce\Documents\USN_113_java>java TestQuad
```

```
Enter the values of quadratic coefficients a, b, c:
```

```
2 -9 4
```

```
The roots are real and distinct!
```

```
The roots are: 4.0 and 0.5
```

```
C:\Users\bmsce\Documents\USN_113_java>java TestQuad
```

```
Enter the values of quadratic coefficients a, b, c:
```

```
4 3 2
```

```
The roots are imaginary!
```

```
The roots are: 0.2244789404140899 and -0.9744789404140899
```

```
C:\Users\bmsce\Documents\USN_113_java>
```