

1. Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$.

```
import java.util.*;  
import java.lang.*;  
  
public class Main  
{  
    public static void main(String args[])  
    {  
        Scanner scan= new Scanner(System.in);  
        double a= scan.nextDouble();  
        double b= scan.nextDouble();  
        double c= scan.nextDouble();  
        double d= (b*b)-(4*a*c);  
        if(d==0)  
        {  
            double r1 = -b/(2*a);  
            double r2 = r1;  
            System.out.println(r1);  
            System.out.println(r2);  
            System.out.println("Roots are real and equal");  
        }  
        else if (d>0)  
        {  
            double r1=(-b+Math.sqrt(d))/(2*a);  
            double r2=(-b-Math.sqrt(d))/(2*a);  
            System.out.println(r1+" "+r2);  
            System.out.println("Roots are real and distinct");  
        }  
    }  
}
```

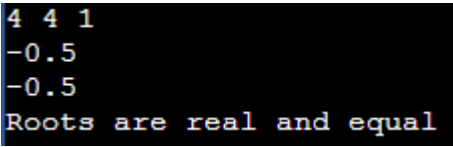
```

    }
    else
    {
        double r1= -b/(2*a);
        double r2= (Math.sqrt(-d))/(2*a);
        System.out.println("Roots are imaginary");
        System.out.println(r1+"i"+r2);
        System.out.println(r1+"-i"+r2);
    }

}
}

```

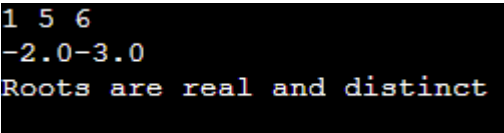
Output:

1. 

```

4 4 1
-0.5
-0.5
Roots are real and equal

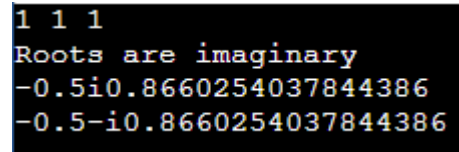
```

2. 

```

1 5 6
-2.0-3.0
Roots are real and distinct

```

3. 

```

1 1 1
Roots are imaginary
-0.5i0.8660254037844386
-0.5-i0.8660254037844386

```