LRA 12-12-23 Date 12/12/23
Page

1) Develop a java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$ Read in a, b, c & use the quadratic formula. If the discriminate $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

```
import java.util.Scanner;
class Quadratic
{
 int a,b,c;
 double r1, r2, d;
 void getd()
{
 Scanner s = new Scanner(System.in);
 System.out.println("Enter the coefficients of
 a, b, c");
 a = s.nextInt();
 b = s.nextInt();
 c = s.nextInt();
}
 void compute()
 {
 while(a==0)
 {
 System.out.println("Not a quadratic eqn");
 System.out.println("Enter a non zero value for a:");
 Scanner s = new Scanner(System.in);
 a = s.nextInt();
}
 d = b*b-4*a*c;
 if(d==0)
 {
```

```
        r1 = (-b)/(2*a);
        System.out.println("Roots are real & equal");
        System.out.println("Root 1 = Root 2 = " + r1);
    }
    else if (d>0)
    {
        r1 = ((-b) + (Math.sqrt(d)))/(double)(2*a);
        r2 = ((-b) - (Math.sqrt(d)))/(double)(2*a);
        System.out.println("Roots are real & distinct");
        System.out.println("Root 1 = " + r1 + "Root 2 = " + r2);
    }
    else if (d<0)
    {
        System.out.println("Roots are imaginary");
        r1 = (-b)/(2*a);
        r2 = Math.sqrt(-d)/(2*a);
        System.out.println("Root 1 = " + r1 + " + i " + r2);
        System.out.println("Root 1 = " + r1 + " - i " + r2);
    }
}
}

class QuadraticMain
{
    public static void main(String args[])
    {
        Quadratic q = new Quadratic();
        q.getd();
        q.Compute();
    }
}
```

Date __/__/____
Page _____

o/p

Enter the coefficient of a, b, c
2
3
4

Roots are imaginary
Root 1 = 0.0 + i 1.198957888
Root 2 = 0.0 - i 1.1989578

Enter the coefficient of a, b, c
2
4
2

Roots are real & equal
Root 1 = Root 2 = 1

Enter the coefficient of a, b, c
2
8
2

Roots are real & distinct
Root 1 = +0.2679
Root 2 = -3.732