① Get the value of co-efficients a, b, c

② Calculate the discriminant using the formula $(b^2 - 4ac)$

③ Depending on value of discriminant we obtain different roots

a) if - discriminant > 0 then we get a real roots which are obtained by $(-b \pm \sqrt{disc}) / (2a)$

b) if - discriminant = 0 then we get real roots which are obtained by $(-b) / (2a)$

c) if - discriminant < 0 then we get imaginary roots. we divide the roots into real part & imaginary part. Since we cannot find ~~dis~~ sqrt of -ve no. We find the absolute value and then the imaginary part.

real = (-b)/(2a)

imag = sqrt(absolute(disc))/(2a)

Roots are given by real ± i imag

```
import java.util.*;
public class QuadraticRoot{
    public static void main(String[] args){
        double a,b,c; // ax^2 + bx + c
        Scanner input = new Scanner(System.in);
        a = input.nextDouble();
        b = input.nextDouble();
        c = input.nextDouble();
        double disc = Math.pow(b,2) -(4*a*c);
        if(disc>0){
            System.out.println("The roots are real & unequal");
            double r1 = (-b + Math.sqrt(disc))/(2*a);
            double r2 = (-b - Math.sqrt(disc))/(2*a);
            System.out.println("The roots are: "+r1+" and "+r2);
        }else if(disc==0){
            System.out.println("The roots are real & equal");
            double r1=(-b)/(2*a);
            System.out.println("The roots are: "+r1+" and "+r1);
        }else{
            System.out.println("The roots are imaginary & unequal");
            double real = (-b)/(2*a);
            double imag = Math.sqrt(Math.abs(disc))/(2*a);
            System.out.println("The roots are: "+real+"+i"imag+"and"
                    +real+"-i"+imag);
        }
    }
}
```