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1BM19CS177
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- **Roots of Quadratic Equation**

```
import java.util.Scanner;
public class roots
{
    double a,b,c,d;
    roots(double a, double b, double c, double d)
    {
        this.a = a;
        this.b = b;
        this.c = c;
    }
    public static void main(String [] args)
    {
        Scanner in = new Scanner(System.in);
        System.out.println("Enter a,b,c :");
        double a1 = in.nextDouble();
        double b1 = in.nextDouble();
        double c1 = in.nextDouble();
        in.close();
        roots obj = new roots(a1,b1,c1);
        obj.d = obj.determinant();
        if(obj.d > 0)
            obj.distinct();
        else if(obj.d == 0)
            obj.equal();
        else
            obj.imaginary();
    }
```

```
public double discriminant()
{
    return(b*b-Math.sqrt(4*a*c));
}
public void distinct()
{
    double x = Math.sqrt(d);
    double r1 = (-1*b+x)/(2*a);
    double r2 = (-1*b.-x)/(2*a);
    System.out.println("\n The roots are
    real and distinct;\n");
    System.out.println("First root : "+r1);
    System.out.println("Second root : "+r2);
}
public void equal()
{
    double x = Math.sqrt(d);
    double r1 = (-1*b+x)/(2*a);
    System.out.println("\n The roots are
    real and equal;\n");
    System.out.println("Root : "+r1);
}
public void imaginary()
{
    System.out.println("\n The roots are
    imaginary");
    double x = Math.Sqrt(-d);
    double r = (-b)/(2*a);
    double i = Math.abs(x/(2*a));
```

```
if(r==0) r=0;
System.out.println("The roots are :" +r+"
  (+|-) i + " + i +");
}
}
```