

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

```
import java.util.Scanner;

public class Quadratic
{
    public static void main(String[] args)
    {
        double a, b, c, root1, root2;
        double d;

        Scanner sc = new Scanner(System.in);
        System.out.println("Enter value of b: ");
        b = sc.nextDouble();
        System.out.println("Enter the value of a: ");
        a = sc.nextDouble();
        System.out.println("Enter value of c: ");
        c = sc.nextDouble();
        d = (b*b) - (4*a*c);

        if (d > 0)
        {
            root1 = (-b + Math.sqrt((b*b) - (4*a*c))) / (2*a);
            root2 = (-b - Math.sqrt((b*b) - (4*a*c))) / (2*a);
            System.out.println("First root is: " + root1);
            System.out.println("Second root is: " + root2);
        }
        else if (d == 0)
        {
            root1 = -b / (2*a);
            System.out.println("Both roots are same and equal to : " + root1);
        }
        else if (d < 0)
        {
            System.out.println("Real roots do not exist");
        }
    }
}
```

```
import java.util.Scanner;
public class Quadratic
{
public static void main(String[] args)
{
double a,b,c,root1,root2;
double d;
Scanner sc=new Scanner(System.in);
System.out.println("Enter the value of b:");
b=sc.nextDouble();
System.out.println("Enter the value of a:");
a=sc.nextDouble();
System.out.println("Enter the value of c:");
c=sc.nextDouble();
d=(b*b)-(4*a*c);
if(d>0)
{
root1=(-b+Math.sqrt((b*b)-(4*a*c)))/(2*a);
root2=(-b-Math.sqrt((b*b)-(4*a*c)))/(2*a);
System.out.println("First root is:"+root1);
System.out.println("Second root is:"+root2);
}
else if(d==0)
{
root1= -b/(2*a);
System.out.println("Both roots are same and are equal to:"+root1);}
else if(d<0)
{
System.out.println("Real roots dont exist");
}
}
```



```
{
double a,b,c,root1,root2;
double d;
Scanner sc=new Scanner(System.in);
System.out.println("Enter the value of b:");
b=sc.nextDouble();
System.out.println("Enter the value of a:");
a=sc.nextDouble();
System.out.println("Enter the value of c:");
c=sc.nextDouble();
d=(b*b)-(4*a*c);
if(d>0)
{
root1=(-b+Math.sqrt((b*b)-(4*a*c)))/(2*a);
root2=(-b-Math.sqrt((b*b)-(4*a*c)))/(2*a);
System.out.println("First root is:"+root1);
System.out.println("Second root is:"+root2);
}
else if(d==0)
{
root1= -b/(2*a);
System.out.println("Both roots are same and are equal to:"+root1);}
else if(d<0)
{
System.out.println("Real roots dont exist");
}
}
}
```



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Command Prompt

Microsoft Windows [Version 10.0.18363.1139]
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C:\Users\sohan>cd C:\Users\sohan\Desktop\Java Programs\Quadratic Eq

C:\Users\sohan\Desktop\Java Programs\Quadratic Eq>javac Quadratic.java

C:\Users\sohan\Desktop\Java Programs\Quadratic Eq>java Quadratic

Enter the value of b:

34

Enter the value of a:

-21

Enter the value of c:

4

First root is:-0.11015275789656984

Second root is:1.7292003769441888

C:\Users\sohan\Desktop\Java Programs\Quadratic Eq>_



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