7) Develop a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. Read in a, b, c and 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;
public class Quadratic
{
public static void main (String args [])
 {
   double a, b, c;
   double root1, root2;
   Scanner in = new Scanner (System.in);
   S.O.pln(" Enter value of a :") ;
   a = in.nextDouble();
   S.O.pln(" Enter value of b:");
   b= in.nextDouble();
   S.O.pln(" Enter value of c:");
   c= in.nextDouble();
   double determinant = (b*b) -(4*a*c);
   double sq = Math.sqrt(determinant);
   // condition for real and different roots
   if (determinant>0)
{
   root1 = ((-b+sq)/(2*a));
   root2 = (-b-sq) /(2*a);
   S.O.pln(" Root1 = "+root1 +"\t"+ "Root2 = "+ root2);
}
```

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```
// condition for real and equal roots
else if (determinant == 0)
{
  root1 = root2 = (-b+sq)/(2*a);
  S.O.pln ("Root1 = Root2 = " + root1);
}
// condition for roots that are not real
else
{
double real = -b/(2*a);
double img = Math.sqrt(-determinant)/(2*a);
S.O.pln("Root1 = " + real + "+" + img + "i" + "\t" + "Root2 = " + real + "-" + img + "i");
}
}
}
```

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OUTPUT:-

```
Enter value of a:
5
Enter value of b:
2
Enter value of c:
1
Root1 = -0.2+0.4i        Root2=-0.2-0.4i
```

```
Enter value of a:
1
Enter value of b:
-4
Enter value of c:
6.25
Root1 = 2.0+1.5i         Root 2 = 2.0-1.5i
```

```
Enter value of a:
5
Enter value of b:
6
Enter value of c:
1
Root 1 = -0.2        Root2 = -1.0
```
