

## Lab program:

(1) Develop a Java program that prints all real sol<sup>n</sup> to the quadratic eq<sup>n</sup>  $ax^2 + bx + c = 0$ .  
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 sol<sup>n</sup>s.

### → Algorithm.

Steps (1) Input the value of a, b, c

(2) Calculate  $d = b^2 - 4 \times a \times c$

(3) If ( $d < 0$ )

Display that there are no real sol<sup>n</sup>s

else if ( $d = 0$ )

Display that Roots are Equal

Calculate  $r_1 = r_2 = (-b / 2 \times a)$

else

Display roots are real and

calculate  $r_1 = -b + d / 2 \times a$  and

$r_2 = -b - d / 2 \times a$ .

(4) print  $r_1$  and  $r_2$

(5) End program algorithm.



import java.util.\*;  
class Main

{  
public static void main (String[] args)

{  
double a, b, c, d, root1, root2;  
Scanner sc = new Scanner (System.in);

a = sc.nextDouble();

b = sc.nextDouble();

c = sc.nextDouble();

d = b\*b - 4\*a\*c;

if (d > 0)

{

root1 = (-b + Math.sqrt(d)) / (2\*a);

root2 = (-b - Math.sqrt(d)) / (2\*a);

System.out.println("root1 = " + root1 +  
" and root2 = " + root2);  
}

else if (d == 0)

{

root = root2 = -b / (2\*a);

System.out.println("root1 = root2 = "  
+ root1);

}

else

{

System.out.println("There are  
no real solutions");

}

}

}



Input:

Enter the coefficients a, b, c

1

-3

2

Output:

root 1 = 1 and root 2 = 2

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Input:

Enter the coefficients a, b, c

1

2

3

output:

There are no real solutions.