

Lab 1: 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 discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

→ import java.util.Scanner;

class Quadratic

{

 int a, b, c;

 double r1, r2, d;

 void getd()

{

 Scanner s = new Scanner(System.in);

 System.out.println("Enter the coefficients");

 a = s.nextInt();

 b = s.nextInt();

 c = s.nextInt();

}

 void compute()

{

 while (a == 0)

{

 System.out.println("Not a quadratic equation");

 System.out.println("Enter a non zero value for a:");

 Scanner s = new Scanner(System.in);

 a = s.nextInt();

$$d = b^*b - 4^*a^*c$$

{ if ($d == 0$)

$$r_1 = (-b) / (2^*a);$$

System.out.println("Roots are real & equal");

System.out.println("Root 1 = Root 2 = "
+ r1);

}

else if ($d > 0$)

{

$$r_1 = ((-b) + (\text{Math.sqrt}(d))) / (\text{double})(2^*a);$$

$$r_2 = ((-b) - (\text{Math.sqrt}(d))) / (\text{double})(2^*a);$$

System.out.println("Roots are real &
distinct");

System.out.println("Root 1 = " + r1 + "
Root 2 = " + r2);

}

else if ($d < 0$)

{

System.out.println("Roots are imaginary");

$$r_1 = (-b) / (2^*a);$$

$$r_2 = \text{Math.sqrt}(-d) / (2^*a);$$

System.out.println("Root 1 = " + r1 + " + i" + r2);

System.out.println("Root 1 = " + r1 + " - i" + r2);

}

}

class QuadraticMain

{

public static void main(String args[])

{

Quadratic q = new Quadratic();

q.getd();

q.compute();

System.out.println(q.root1);

System.out.println(q.root2);

3.

out: Enter the coefficients of a,b,c

4

6 ((A)+iB).sqrt()+(C-iD)=

8 i ((A)+iB).sqrt()-(C-iD)=

Roots are "Imaginary"

11.5

Root11 = 0.0 + i 0.0

Root1 = 0.0 - i 0.0

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