

Algorithm.

1. Input a, b, c in $ax^2 + bx + c$.
2. Check if $a = 0$
 - 2.1 Display a should be non zero.
3. else if a not equal to 0
 - 3.1 Let $a^2 = b^2 - 4ac$.
 - 3.2 check if $a^2 > 0$
 - 3.2.1 Display roots are real and unequal.
 - 3.2.2 Let $\text{ans1} = (-b + \sqrt{b^2 - 4ac})/2$
 $\text{ans2} = (-b - \sqrt{b^2 - 4ac})/2$.
 - 3.2.3 display ans1 and ans2 .
 - 3.3 check if $a^2 = 0$
 - 3.3.1 Display roots are real and equal.
 - 3.3.2 Let $\text{ans1} = (-b + \sqrt{b^2 - 4ac})/2$
 $\text{ans2} = (-b - \sqrt{b^2 - 4ac})/2$.
 - 3.3.3 display ans1 and ans2 .
 - 3.4 check if $a^2 < 0$
 - 3.4.1 Display roots are imaginary (no real soln)

```
import java.util.*;
```

```
class quad
```

```
{
```

```
public static void main (String args[])
```

```
{
```

```
double a1, b1, c1, ans1, ans2
```

```
Scanner sc = new Scanner (System.in);
```

```
System.out.println("Enter values of a, b, c for quad eqn in the  
form of  $ax^2+bx+c$  where a should be  
non zero);
```

```
a1 = sc.nextDouble();
```

```
b1 = sc.nextDouble();
```

```
c1 = sc.nextDouble();
```

```
if (a1 == 0)
```

```
System.out.println("a should be non 0");
```

```
else
```

```
{
```

```
a2 = (b*b) - (4*a*c);
```

```
if (a2 > 0)
```

```
{
```

```
Println
```

```
System.out.println("roots are real & unequal");
```

```
ans1 = (-b + sqrdMath.sqrt(a2)) / (2*a1);
```

```
ans2 = (-b - Math.sqrt(a2)) / (2*a1);
```

```
System.out.println("the solutions of quad eqn are" + ans1 + "and" + ans2);
```

```
}
```

```
else if (a2 == 0)
```

```
{
```

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

```
ans1 = (-b + Math.sqrt(a2)) / (2*a1);
```

```
ans2 = (-b - Math.sqrt(a2)) / (2*a1);
```

```
System.out.println("the solutions of quad eqns are" + ans1 + "and" + ans2);
```

```
}
```

```
else  
{  
    System.out.println("There are no real solutions");  
}  
}  
}
```