

// 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 saying that there are no real solutions.

```
import java.util.Scanner;
```

```
class Quadratic {
```

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

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

```
        double a, b, c, d, r1, r2;
```

```
        a = s.nextDouble();
```

```
        b = s.nextDouble();
```

```
        c = s.nextDouble();
```

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

```
        if (d > 0)
```

```
        {
```

```
            System.out.println("The quadratic equation has real & distinct roots");
```

```
            r1 = (-b + Math.sqrt(d)) / (2*a);
```

```
            r2 = (-b - Math.sqrt(d)) / (2*a);
```

```
            System.out.println("roots are " + r1 + " and " + r2);
```

```
        }
```

```
        else if (d == 0) {
```

```
            System.out.println("quadratic equation has real & equal roots");
```

```
            r1 = -b / (2*a);
```

```
            r2 = r1;
```

```
            System.out.println("roots are " + r1 + " and " + r2);
```

```
        }
```

```
        else {
```

```
            System.out.println("The quadratic equation has  
            imaginary roots");
```

```
        }
```

```
    }
```

```
}
```