Quadratic Equations

An equation in the form $ax^2 + bx + c = 0$ is a quadratic equation where a, b and c are real numbers. There are two roots of this equation and these are expressed by,

$$x = \frac{-b \pm \sqrt{b^2 - 4ca}}{2a}$$

The expression $(b^2 - 4ca)$ is known as *discriminant* which is denoted by Δ.

- If $\Delta > 0$, there are two distinct roots

$$x_1 = \frac{-b + \sqrt{\Delta}}{2a} \quad \text{and} \quad x_2 = \frac{-b - \sqrt{\Delta}}{2a}$$

- If $\Delta = 0$, two roots are equal

$$x_1 = x_2 = \frac{-b}{2a}$$

- If $\Delta < 0$, both roots are complex

$$x_1 = \frac{-b}{2a} + i\frac{\sqrt{|\Delta|}}{2a} \quad \text{and} \quad x_2 = \frac{-b}{2a} - i\frac{\sqrt{|\Delta|}}{2a}$$

Now write a program that can accept a, b and c as input. The output should show whether the roots are real or complex. Then print both roots separated by a comma.

Test Case 1

Input

```
1
-5
6
```

Output

```
QUADRATIC EQUATION SOLVER
a*x*x + b*x + c = 0
Enter a :
Enter b :
Enter c :
Roots are real. x = 3, 2
```

Test Case 2

Input

```
1
-6
25
```

Output

```
QUADRATIC EQUATION SOLVER
a*x*x + b*x + c = 0
Enter a :
Enter b :
Enter c :
Roots are complex. x = 3+4i, 3-4i
```