

QUADRATIC FORMULA PROGRAM

To enter a new program, edit or execute an existing one use the **PRGM** button.

Let us enter a program that will calculate the zeroes of the quadratic equation

$$ax^2 + bx + c = 0.$$

The inputs are the values of the coefficients a, b and c . If there are no real solutions, the program reports that. If there are real solutions, the outputs are those solutions.

Press **PRGM**. Then choose **NEW**. Enter the name of the program using the green letters (marked by the top right corner of each button). Let us call our program **QUADFORM**. After typing **QUADFORM**, press **ENTER**. Then you can start typing the program.

Commands you will need: **Disp, Input, If., Then, Else, Goto, Lbl**.

Pressing **PRGM**, and selecting the **CTL** option, will give the following commands

- 1: If
- 2: Then
- 3: Else
- 9: Lbl
- 0: Goto

Pressing **PRGM**, then \blacktriangleright will select the **I/O** option. This option has the following commands:

- 1: Input
- 3: Disp

To type letters, use the **ALPHA** button. To type spaces between words, press the **ALPHA** button and then the **0** button.

To type the arrow symbol, press the button **STO**→.

To type symbol $<$, press **2nd MATH** and choose option 5.

PROGRAM:QUADFORM (press **ENTER** after each line)

```
: Disp "ENTER A"  
: Input A  
: Disp "ENTER B"  
: Input B  
: Disp "ENTER C"  
: Input C  
: B^2-4AC→ D  
: If D< 0  
: Then  
: Disp "NO REAL SOLUTIONS"  
: Goto 1  
: Else  
: (-B+√(D))/(2*A)→M  
: (-B-√(D))/(2*A)→N  
: Disp "SOLUTIONS", M, N  
: Lbl 1
```

When you finish typing, press **QUIT** (**2nd** and **MODE**).

Let us solve the equation $2x^2-x-3=0$.

To start the program, press **PRGM**. Choose **EXEC** and **QUADFORM**. If this is the only program you have in your calculator then just press **ENTER**.

The output will be

prgmQUADFORM.

Then type **ENTER**. The display will show

ENTER A

?

Type **2**, then **ENTER**. Similarly, enter **-1** for **B** and **-3** for **C**.

The solutions will be 1.5 and -1.

Let us solve $2x^2-x+3=0$ now. You will get the "**NO REAL SOLUTIONS**" output.

When you finish using the program press **CLEAR**. To start the program again, just go to **PRGM** and choose **EXEC** and **QUADFORM**.