TI86 Quadratic Formula Program QUAD2

Given the coefficients of a quadratic equation, it gives the solutions, real or complex, graphs the corresponding function, gives the vertex, and allows you to trace along the graph.

```
:CILCD
:Func
:Float
:1→xScl
:1→yScl
:Outpt(1,1,"GRAPHICAL"
:Outpt(2,4,"QUADRATIC"
:Outpt(3,8,"EQUATIONS"
:Outpt(5,1,"AX^2 + BX + C = 0"
:Outpt(7,3,"TO CONTINUE,"
:Outpt(8,3,"PRESS ENTER."
:Pause
:FnOff
:y1=Ax^2+Bx+C
:Lbl A1
:CILCD
:Outpt(7,4,"ENTER THE"
:Outpt(8,3,"COEFFICIENTS"
:Disp "AX^2 + BX + C = 0"
:Input "A=",A
:If A= =0:Then
:Outpt(5,1,"A CANNOT BE ZERO."
:Outpt(7,3,"PRESS ENTER"
:Outpt(8,2,"AND TRY AGAIN."
:Pause
:Goto A1
:End
:Input "B=",B
:Input "C=",C
:B^2–4A*C→D
:Outpt(6,1,"DISCRIM = B^2–4AC"
:Outpt(7,1,"="
:Outpt(7,3,D
:Outpt(8,1,"* PRESS ENTER *"
:Pause
:CILCD
:-B/(2A)→x
:If A>0:Then
:y1→yMin
:y1+10→yMax
:End
:If A<0:Then
:y1→yMax
:y1–10→yMin
```

:End
:If yMin>-1:-5→yMin
:If yMax<1:5→yMax
:x–7→xMin
:x+7→xMax
:If D>0:Then
$:(-B+\sqrt{\ }D)/(2A)\rightarrow$U
$:(-B-\sqrt{\ }D)/(2A)\rightarrow$L
:If A<0:Then
:U→W
:L→U
:W→L
:End
:U+4→xMax
:L– 4→xMin
:End
:If xMin≥0:-2→xMin
:If xMax≤0:2→xMax
:Fix 5
:If D>0:Then
:Outpt(1,1,"2 REAL SOLNS:"
:Outpt(2,1,"X = "
:Outpt(2,15, "OR"
:Outpt(2,5,L
:Outpt(3,1,"X = "
:Outpt(3,5,U
:End
:If D= = 0:Then
:-B/(2A)→U
:Outpt(1,1,"1 REAL SOLUTION:"
:Outpt(2,1,"X = "
:Outpt(2,5,U
:End
:If D<0:Then
:-B/(2A)→R
$:\text{abs}\,(\sqrt{\ }(-D)/(2A))\rightarrow$I
:Outpt(1,1,"2 COMPLEX SOLNS:"
:Outpt(2,1,"X = "
:Outpt(2,5,R
:Outpt(3,3,"+OR– "
:Outpt(3,8,I
:Outpt(3,16,"i"
:End
:Outpt(4,1,"* PRESS ENTER *"
:Pause

```
:CILCD
:-B/(2A)→x
:Outpt(1,1,"PARABOLA VERTEX:"
:Outpt(2,1,"X = "
:Outpt(2,5,x
:Outpt(3,1,"Y = "
:Outpt(3,5,y1
:Outpt(4,1,"* PRESS ENTER *"
:Pause
:PtOn(x,y1
:Pause
:Float
:CILCD
:Lbl A2
:Outpt(1,1,"CHOOSE AN OPTION"
:Menu(1,"NEW",A1,2,"TRACE",A3,3,"QUIT",A4)
:Lbl A3
:(xMin+xMax)/2→M
:2^int (ln ((xMax–xMin)/94)/ln (2)+.5)→D
:int (M–47D+.5)→xMin
:D→Δx
:yMin–.12(yMax–yMin)→yMin
:Trace
:Goto A2
:Lbl A4
:FnOff
:Stop
```

CILCD clears the home screen. It is found under the **I/O** menu within the **Program** menu (obtained through pressing the **PRGM** button while editing a program). Also under the **I/O** menu, you will find **Input**, **Disp**, and the **quote** marks.

The **CTL** (control) menu within the **Program** menu contains **If**, **Then**, **Else**, **End**, **Menu**, **Lbl**, **Goto**, **Pause**, and **Stop**.

Func sets the calculator mode to graph functions in *x* and *y*. **Func** is gotten by selecting it in the **MODE** menu. The second function of the **MORE** button is **MODE**. Also, in the **MODE** menu, you will find **Float**. This sets the data output to use as many decimals as it needs, as opposed to rounding all answers to a specific number of decimal places.

Fix sets the number of decimal places in outputs to be a specific number. To get **Fix 5**, while editing the program, select **MODE** and select **5** in the line "**Float 012345678901**".

Most objects are found in the **Catalog**. The catalog menu (**CATLG-VARS**) is the second function of the **CUSTOM** button, located directly below the **arrows**. Once in the **CATALG-VARS** menu, practically everything can be gotten from the **CATLG** option. However, it may be easier to search the specific menus. Under the **WIND** menu, you will find **xMin**, **xMax**, **xScl**, **yMin**, **yMax**, **yScl**, and Δx.

The **equal sign** is the **ALPHA** function of the **STO→** button, left of the number pad. The **colon :** is the second function of the **decimal point**. The **comma ,** has its own button located on the left of the calculator.

The **double equal sign** and **inequality signs** are found under the **TEST** menu, the second function of the **2** in the number pad.

y1 is obtained by pressing the **GRAPH** button while editing the program. Press **F1** for **VARS**. Press **F1** again to select **y**. You can also find **FnOff** here under **VARS**. **Trace** is also found by accessing the **GRAPH** menu; select **Trace** from the main **GRAPH** menu.

PtOn can be found under the **DRAW** menu within the **GRAPH** menu. You'll need to press **MORE** to get to **DRAW** and again to get to **PtOn**.

The → arrow is gotten pressing the **STO→** button to the left of the number pad.

The lower case **x**'s are gotten by the **x-VAR** button. The upper case **X**'s are gotten by the **ALPHA** function of the **plus sign**.

int and **abs** are found under the **NUM** menu within the **MATH** menu, the second function of the **times sign**.

The **ALPHA** function of the **(-)** button in the number pad is the **space** key.

ln has its own button. It looks like **LN** and it's on the left of the calculator.