Quadratic Formula Program for the TI 83

This program will solve the quadratic equation $ax^2 + bx + c = 0$ given values for *a*, *b*, and *c*.

Where to find various commands:
If you press the PRGM button while you are entering a program, you will open up the CTL and I/O menus (control and input/output). Under CTL, you will find **If, Then, Else, and End**. Under I/O, you will find **Input** and **Disp**. The → is gotten by hitting the STO→ button to the left of the 1 button. The = and < are under the TEST menu, which is the second function of the MATH button. The words in CAPS are to be typed in using the keyboard. The **space key** is the ALPHA function of the 0 key. The **quote marks** is the ALPHA function of the + key.

PROGRAM: QUADFORM
:Disp "ENTER A"
:Input A
:Disp "ENTER B"
:Input B
:Disp "ENTER C"
:Input C
:B² – 4AC →D
:Disp "DISCRIMINANT="
:Disp D
:If D < 0
:Then
:Disp "NO REAL"
:Disp "SOLUTIONS"
:Else
:(-B + $\sqrt{(D)}$)/(2A) → X   (Use the negative key for the - B part.)
:Disp "X1="
:Disp X
:(-B – $\sqrt{(D)}$)/(2A) → Y   (Use the subtraction key for the – sign directly in
                                        front of the square root symbol.)
:Disp "X2="
:Disp Y
:End

To check your program, use it to solve $2x^2 + 1x - 5 = 0$. Here *a* = 2, *b* = 1, and *c* = -5. You should get a discriminant of 41 and solutions of 1.3508 and -1.8508.