TI 83/84: The Quadratic Formula Program:

Here's a program that will let your TI-83, 83+, 84, 85, or 86 <u>do the quadratic formula for you</u>.   If the answers are complex numbers, it will automatically write them as complex numbers.   If you have a Casio calculator, you don't need to do this – see a different handouts.

```
:Prompt A, B, C
:a+bi
:B²-4A*C →D
:(‾B+√(D))/(2A) →S
:(‾B−√(D))/(2A) →T
:Disp S,T
:REAL
:Stop
```

<u>Here's how to get the program into your TI-83 or 83+:</u>

press PRGM

choose NEW, press ENTER

> To "choose," use the arrow keys to highlight the thing you want, then press ENTER to choose it.

type in the name of your program: QUADRATI

> Notice that the calculator is already in alphabet mode.   Look for the letters to the top right of the calculator keys, then type in the title.

Press ENTER

Start entering the program (check off each line as you enter it):

:Prompt A,B,C

   press PRGM, right arrow to I/O, choose 2: Prompt (remember to press ENTER to actually choose it!), press ALPHA A, press the comma, then ALPHA B, press the comma, and ALPHA C, press ENTER to end the line.

:a+bi

   press MODE, arrow to a+bi, press ENTER to choose it, press ENTER to end the line.
   This line is not needed on the 85 or 86.

:B²-4A*C →D

   ALPHA B x² - 4 ALPHA A X ALPHA C STO ALPHA D ENTER
   (in other words, just type it in, use STO► key for the arrow.   Use subtraction, not negative.   Press ENTER to end the line.)

:(‾B+√(D))/(2A) →S

   type it in, use STO► key for the arrow.   Double check parentheses!   Use a negative in front of the B, not a subtraction.   Press ENTER to end the line.

:(‾B−√(D))/(2A) →T

   type it in, use STO► key for the arrow.   Double check parentheses!   Press ENTER to end the line.

:Disp S,T

   press PRGM, right arrow to I/O, choose 3: Disp, press ALPHA S, press , , press ALPHA T, press ENTER to end the line.

:REAL

   press MODE, arrow to *real*, press ENTER to choose it, press ENTER to end the line.
   This line is not needed on the 85 or 86.

:Stop

   press PRGM, choose F: Stop (use your arrow to go way down the list).

   Press 2nd QUIT to quit editing the program.

If you get messed up partway through the program, press 2nd QUIT to get back to the home screen, then press PRGM and choose EDIT and QUADRATI.

To run the program, press PRGM, choose QUADRATI, press ENTER twice (once to choose, again to run).

Try it with these examples to make sure that the program is running correctly:

1. $x^2 - 5x + 6 = 0$

   A = ? 1
   B = ? -5
   C = ? 6

   answers should be: 3
                             2

2. $2x^2 - 9x - 35 = 0$

   A = ? 2
   B = ? -9
   C = ? -35

   answers should be: 7
                             -2.5

3. $x^2 - 4x + 13 = 0$

   A = ? 1
   B = ? -4
   C = ? 13

   answers should be: $2 + 3i$
                             $2 - 3i$

4. $x^2 - 9 = 0$

   A = ? 1
   B = ? 0
   C = ? -9

   answers should be: 3
                             -3