Calculator programs for MATH 110

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You should get these programs from me by the time we start Section 3.3. Just bring your calculator, and I will transfer them from my calculator to yours. These programs both have the syllable “QUAD” in them, so be sure to fix the distinction clearly in your mind so you know when to use which program. The QUAD program graphs a quadratic function, and thus it can also indirectly be used to find the vertex or zeros of the function once you have the graph. The QUADFORM program, however, only calculates the zeros of a quadratic function using the quadratic formula. To get to these programs, push the PRGM button on your calculator and then select the program that you want. (Your calculator might have other programs besides these two, so you might have to scroll down.)

1 QUAD–Graphs a quadratic function in an appropriate window

Input: $A$, $B$, and $C$, to get a graph of $y = Ax^2 + Bx + C$

1. Select QUAD and push ENTER twice.
2. Key in each of $A$, $B$, and $C$ after the question marks and push ENTER each time.
3. After the third enter, it should graph the function in a window such that the vertex and the $x$-intercepts are clearly visible.

Limitations:

- Won’t work if the quadratic function is a perfect square.
- Won’t work if $a = 0$.
- Won’t graph if there are no $x$-intercepts—it still gives the vertex in this case.

These limitations aren’t too serious. The first two arise in simpler cases that can easily be analyzed without using a program. In the third case, the program still gives the most useful piece of information.
QUADFORM—Finds the solutions of a quadratic equation in decimal or radical form

Input: $A$, $B$, and $C$, to get the solutions of $Ax^2 + Bx + C = 0$

1. Select QUADFORM and push ENTER twice.

2. Key in each of $A$, $B$, and $C$ after the question marks and push ENTER each time.

3. After the third enter, the program will normally ask if you want the solution(s) in decimal or radical form. Select the form you want and push ENTER. The solution(s) will be displayed.

4. To exit or use again, push ENTER and make your selection.

This program uses the quadratic formula to find the solutions. Needless to say, it won’t work if $a = 0$. Some quadratic equations do not have any real number solutions. In such a case, the solutions are complex numbers. The program cannot display these in decimal form, but will jump straight to the radical expression, which you can recognize as complex by the presence of an “$i$” in the expression.

Exiting the program. Just as with a computer, one way to exit the program is to turn your calculator off and back on again. Although the display will look the same, the program will no longer be running. The only other way to exit is to choose 2:EXIT on the screen that gives you this option. If you hit the wrong button, you have to do another loop of inputs to get back to the screen with EXIT again.