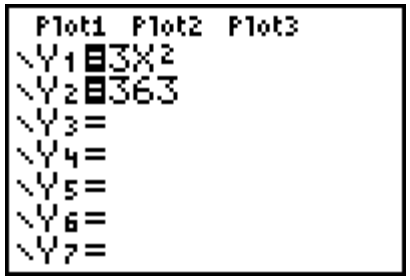
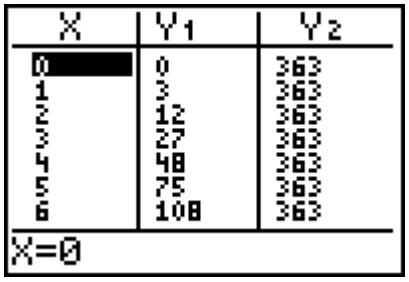
The 8 Ways
With Quadratics – Part II

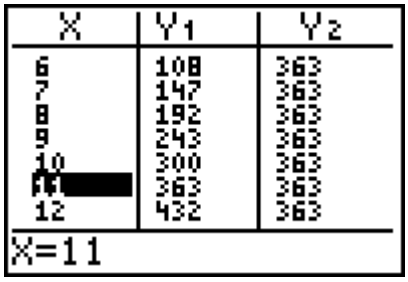
IV. **Table**

Start as you did in the Graph method, and then move to set up your Table by pressing **y** [TBLSET]. Place it in the default position as shown below.



Go to the Table by pressing **y** [TABLE] and move up and down until you locate a value for X that makes the Y_1 and Y_2 values equal.

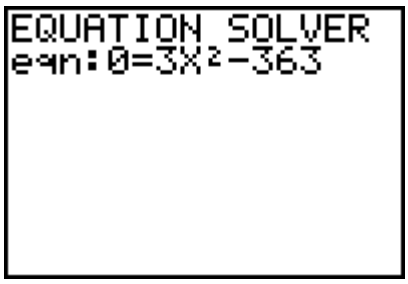




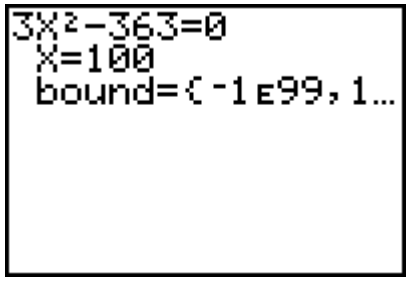
Report this value, and ten try to locate any other solutions. In some cases you will need to adjust the Table Set Up so that the ΔTbl is less than 1.

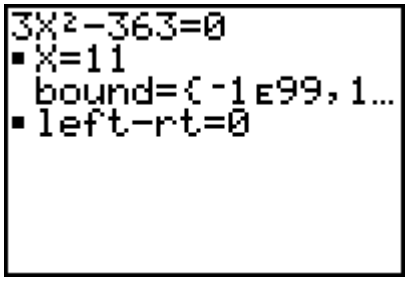
V. **Solver**

Press • and select option 0:Solver… from the MATH Menu. Move up to the top of the window and place the equation in the EQUATION SOLVER window, by rewriting it so that it equals zero. Do this by subtracting one side from the other. Make sure you subtract the whole other side.

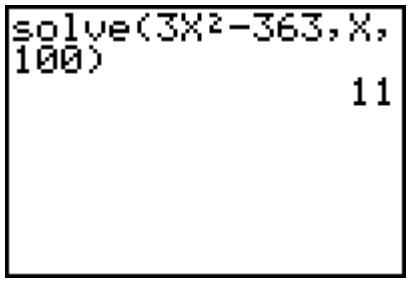


Select the starting value for X and then request the solution by pressing ***f*** **Í** while the cursor is on the X= line.





Repeat this action with another guess for X. Report the answers with a representation of the equation solved. On the TI-82 (as well as on the TI-83) the syntax looks like this, for a guess of X=100.



VI. **Logic**

Record the original equation as Y_1 in the **o** editor. The logical expression then will be True (=1) or False (=0) as we look at different values of X.

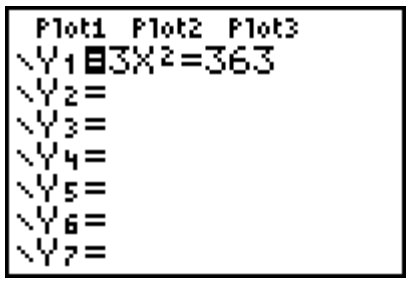
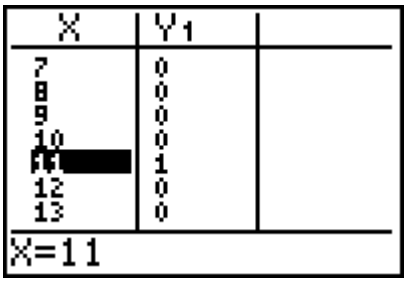
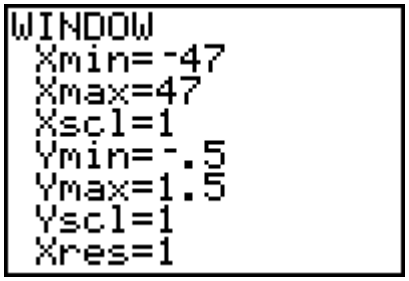
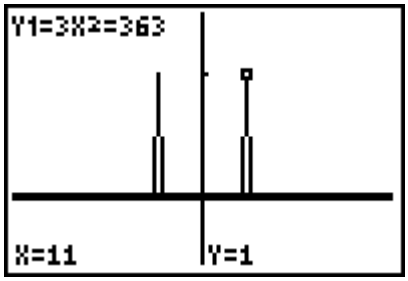


TABLE Way:
Look for the True values in the Table, by setting up the Table as shown below, and using the techniques of the Table Way.



GRAPH Way:
Set up the WINDOW as shown, and look for the "Blips" as you press **s** and **r** .





Just as in the Table method, the answer will only come, if it is an Integer. Adjustment of the WINDOW or ΔTbl would be needed to get at other answers.

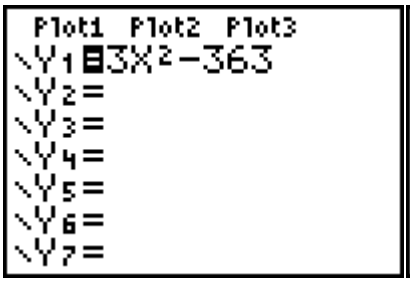
VII. **Guess**

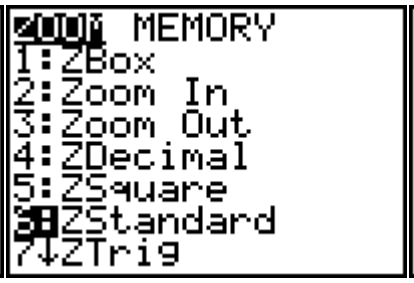
In this method, you will need to just kick back and look at the problem, thinking about what is needed to make equality. In the sample equations we are using ($3X^2 = 363$) we ask what time 3 is 363. This tells us that 121 is the desired number for X^2 . So we ask what perfect squares we know, and if we are at least 11 years old, we know the answer is 11, and of course $^{-}11$, because of the square. Report your answers and be prepared to explain and defend your thinking.

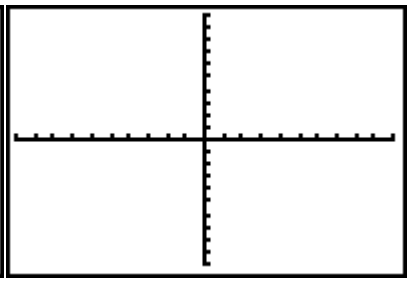
VIII. **Zeros or Roots**

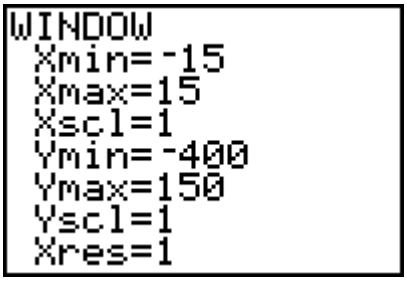
In this method we will use the built-in function on the calculator to locate the place where the function crosses the X-axis. This will be then the solution of the equation. Start by placing the same expression used in Solver, in the Y_1 Editor. That is, solve the equation for 0, so

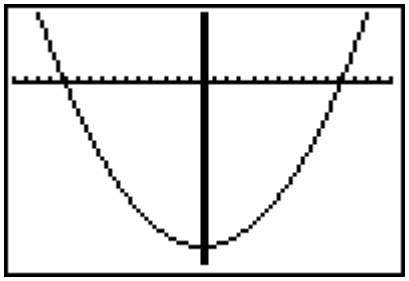
we have Y_1 = the expression = 0. Set the WINDOW at the default (**q** ,) and then adjust it to see the places that the function cross the X-axis.











Now press **y** [CALC] and select option 2:zero (root on the 82) from the CALCULATE menu. Move to the left of one of the X-axis crossings and press **Í** . Then move to the right of that crossing and press **Í** again. Then move to the place that you think the function crosses the X-axis and press **Í** a third time. This will give the X value for that crossing. Report this and then seek other crossings (solutions) by the same method.