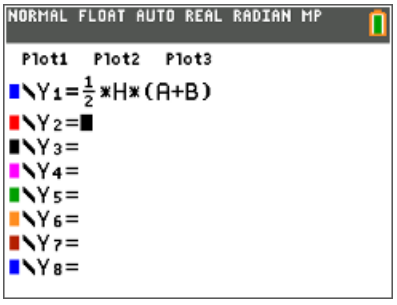
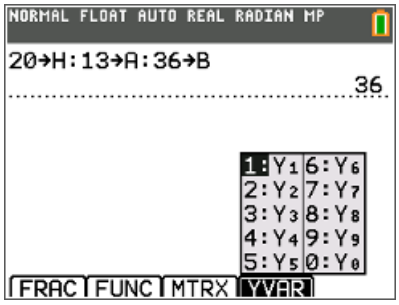
Tips and Tricks for the TI-84, TI-84CE, and TI-SmartView

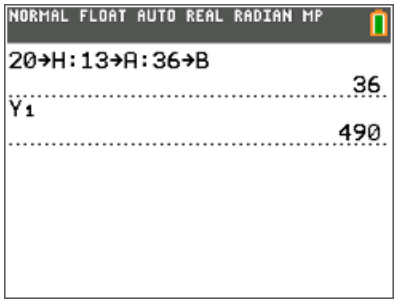
Tom Reardon November, 2015 ***tom@tomreardon.com***

Special thanks to John LaMaster and Margo Mankus for their ideas!

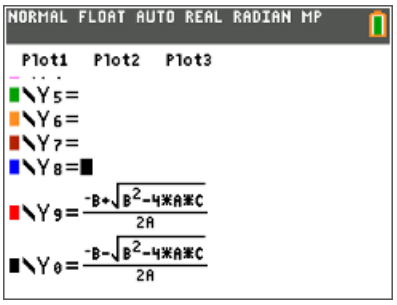
1.Use TI-84 as an evaluator in 'y = '

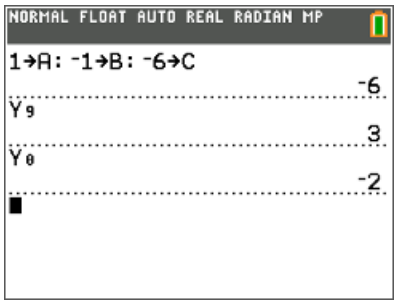




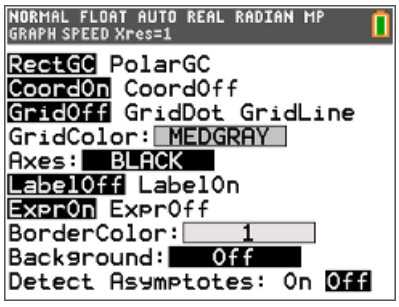


2. "Poor man's Quadratic Formula"





3. If you are not graphing expressions with asymptotes, speed up the process



If "Detect Asymptote" is On, then the graph takes longer to graph on the screen.
This screen is found in the format menu, which is above the zoom key.

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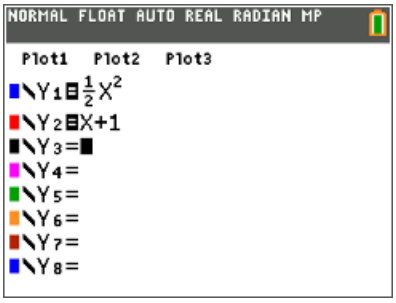
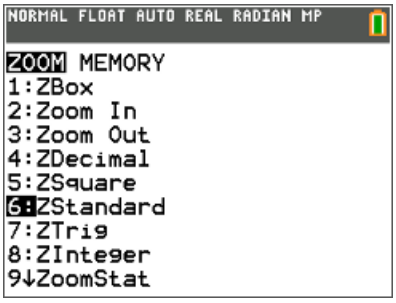
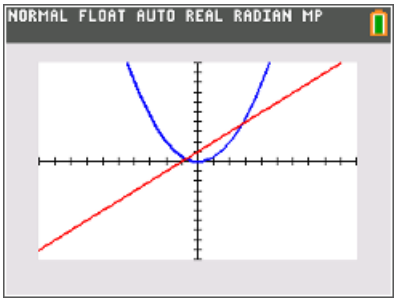
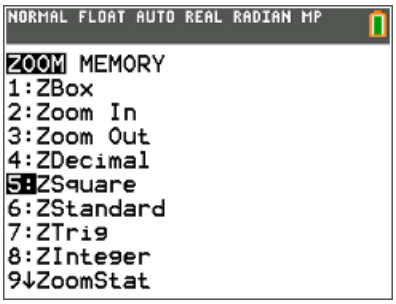
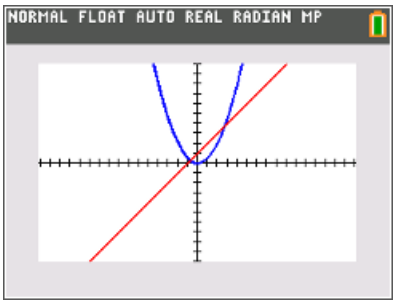
4. Square windows with grids



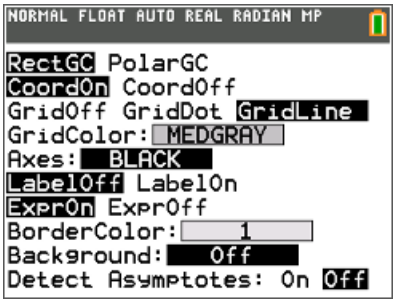


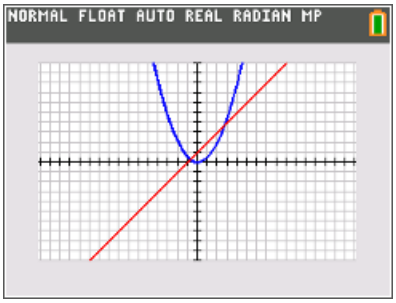




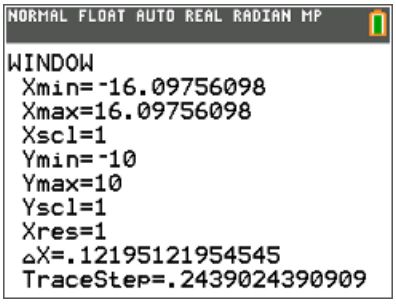


2nd zoom [format]





window



These are the Window settings for the regular Square window. Notice that the ratio of x to y is 16:10. So any multiple of that should be a square window, too.
8:5 4:2.5 12:7.5 32:20

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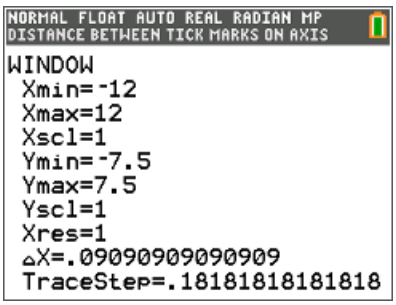
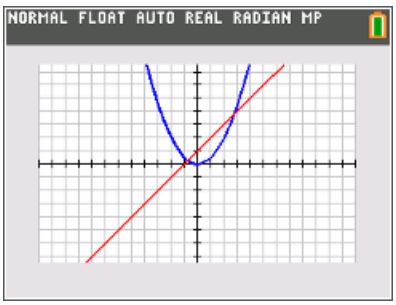
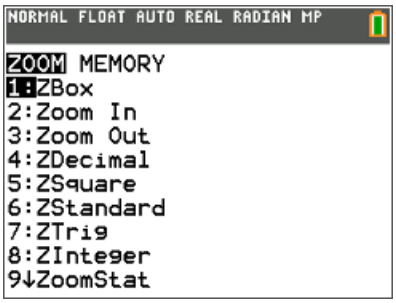


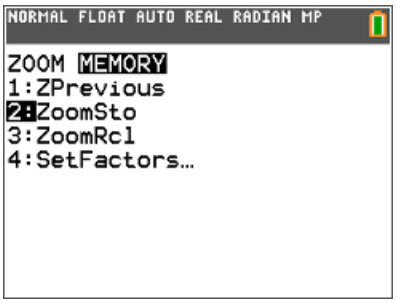


5. Storing Window Settings

I like the Window Setting above so much that I am going to “store” it into memory so that I can recall them at any time.

zoom ▶ to MEMORY ▼ to 2

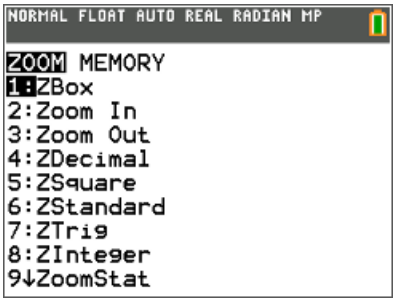


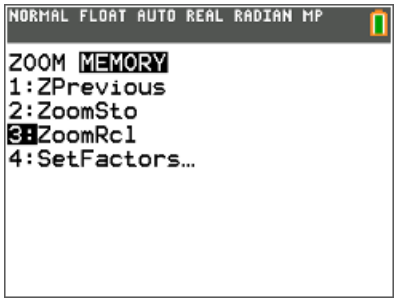


Then press enter .
This is stored in the calculator until you reset or store a different window settings.

To recall the window settings in zoom memory:

zoom ▶ to MEMORY ▼ to 3





Then press enter .

Extra! Check out 1:ZPrevious sometime.

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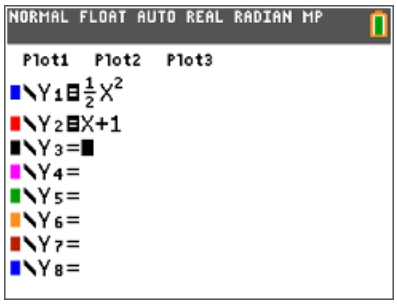
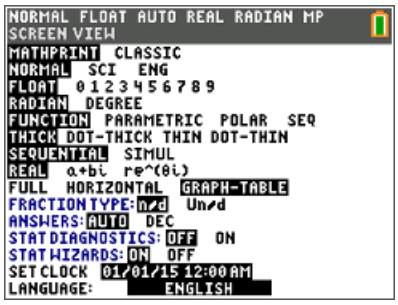
6. Trace on graph and table simultaneously (with "nice" values) 4

(but don't touch the [trace] button!)

Press [y=]



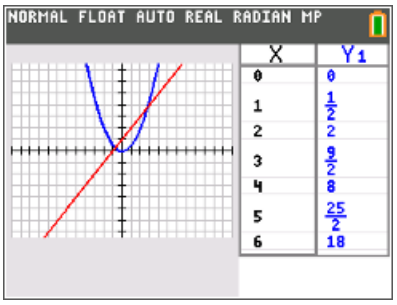
Press [mode]

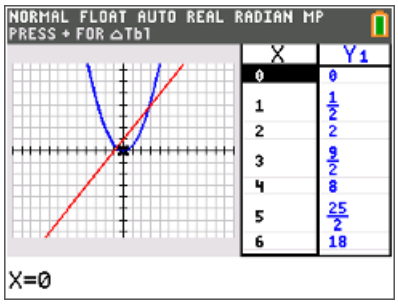


Notice the "Graph-Table" is selected.

[GRAPH]

[2nd] [GRAPH] [table]

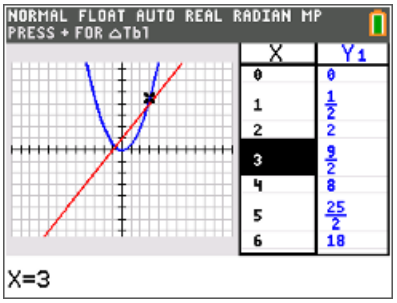


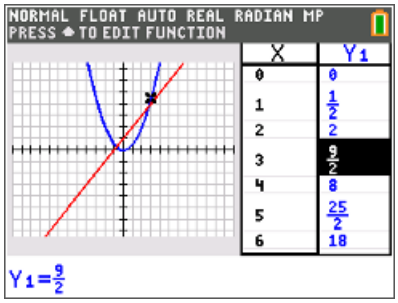


Notice what value is now highlighted.
Also notice the message that says how to change the change in the Tbl increments.

Press [▼] a couple of times

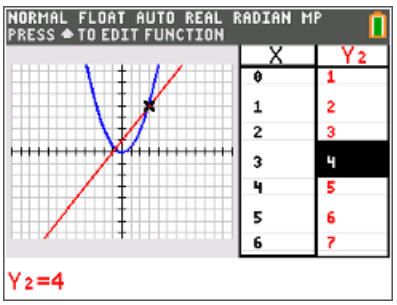
Press [▶] and see what changes



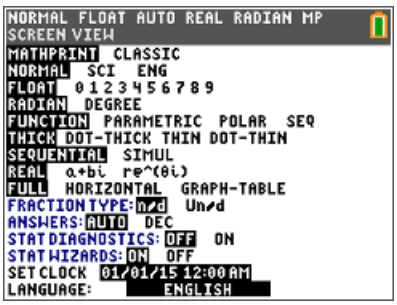


Press [▶] again

Turn off the "Graph-Table" feature. [mode]



"Play"



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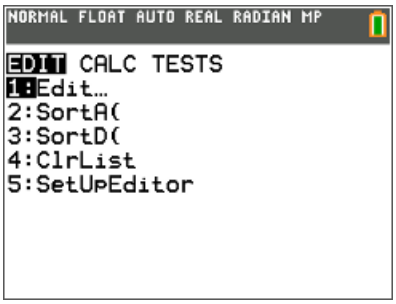
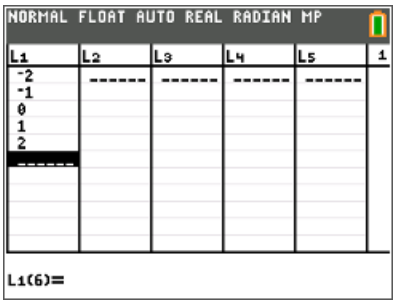
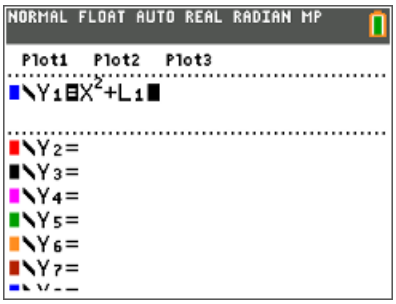
7. Investigating transformation graphing using lists. 5

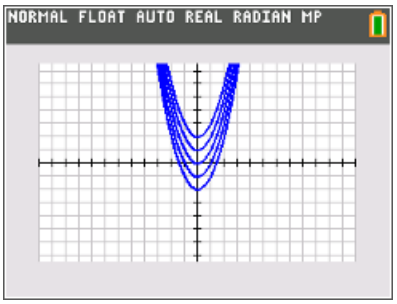
stat 1:Edit… Enter -2, -1, 0, 1, 2 into [L1]

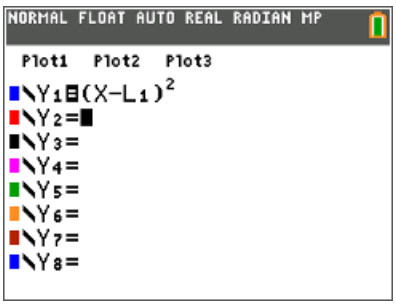


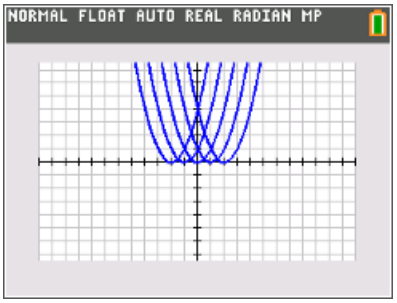


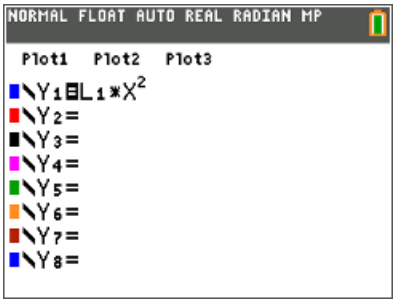
To get [L1] press 2nd stat [list] GRAPH

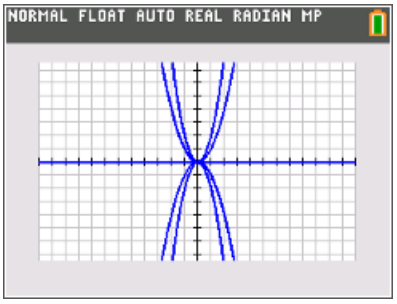












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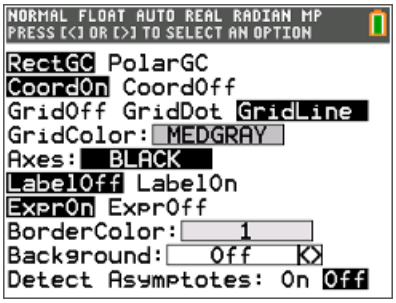
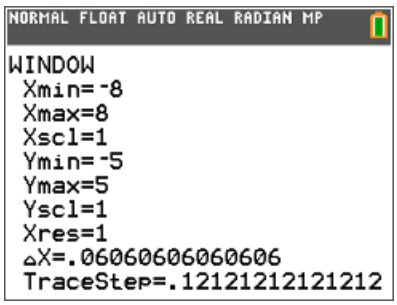
8. Equation that graph, that is, use pictures to help your students test their understanding of transformation graphing. 6

2nd zoom [format] … Background Press ▶ until …

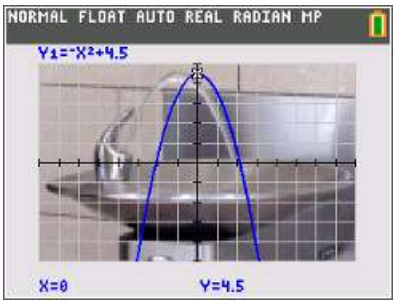


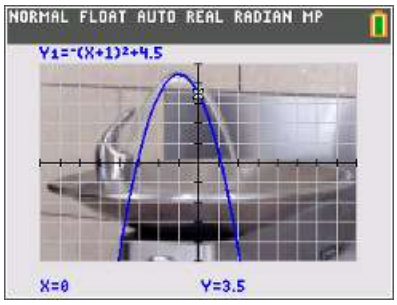
GRAPH

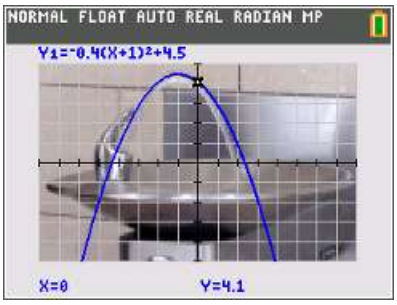
Suggestion for Window Settings:

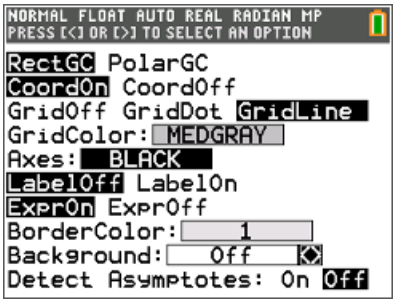


By guess ‘n check, students should attempt to find the equation that models the curve. Some “guesses” are shown below…









To take the picture off the graph screen, change the Background back to Off.

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9. The Finance App. An essential activity for every student. 7

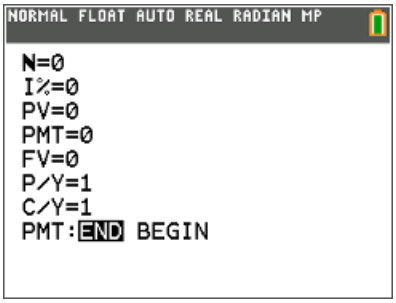
1st. You need to borrow $20,000 to buy a new car. The interest rate is 3.9%. You decide you will pay it in equal monthly payments.

a) What is the monthly payment if you borrow the money for 2 years? How much interest is paid during those two years?
b) What is the monthly payment if you borrow the money for 4 years? How much interest is paid during those two years?
c) What is the monthly payment if you borrow the money for 6 years? How much

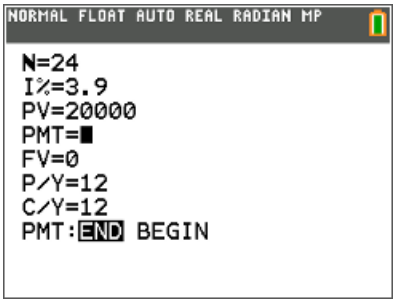
a)Solution:

[apps] then [enter] .

Press [1] for TVM Solver

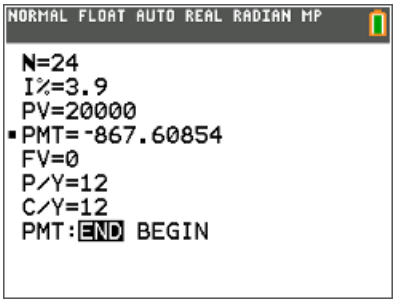


N represents the number of total payment periods
I% represents the interest rate (as a %)
PV is the Present Value of the loan
PMT is the amount of the payment
FV is the Future Value of the loan when it is paid off (zero)
P/Y is the number of payments per year
C/Y is the number of compounding periods per year
Keep this at END



Notice the numbers that are entered.
Since we want to know the amount of the payment, I placed the cursor on the zero in the PMT = spot.

Press [alpha] [solve]



Notice that the payment is negative, because we are paying that amount out.
Make note that the monthly payment for 24 months will be $867.61. Use that number to calculate the amount of interest paid. Press [2nd] [mode] [quit]

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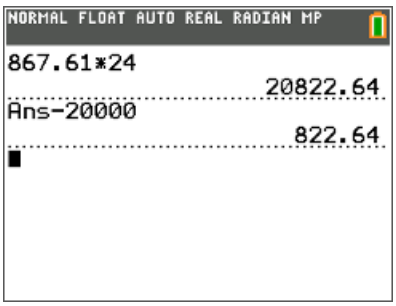
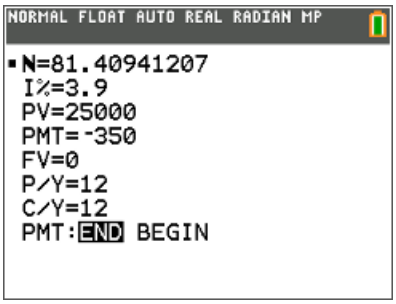


Notice that $20,822.64 was paid to the bank.
$822.64 is the cost of borrowing the money, or what we call interest.
I suggest you have your students do the same thing but for 4 years and 6 years and compare the results.

2nd. You want to buy a car that costs $25,000. The interest rate is 3.9%. You can afford a monthly payment of $350. How long will it take you to pay off the loan?

NOTE: the solution for this is very similar to what we just did. However, we place the cursor on the N (number of payments) because that is what we are looking for.



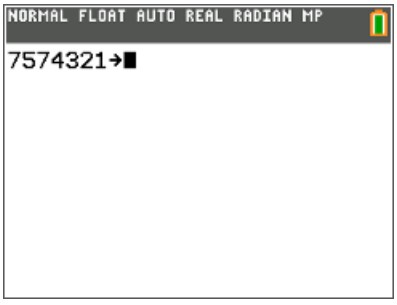
The PMT was entered as negative 350.
Press [alpha] [solve] on the zero in N = 0 to calculate the number of payments.
The answer is 84.4 months. A long time.

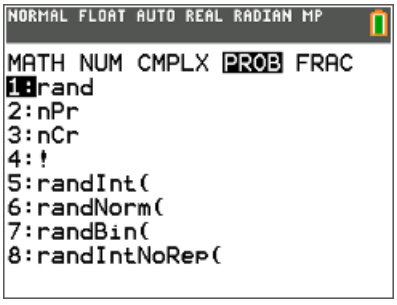
10. How to "seed" the random number generator in your calculator – unique for each student.

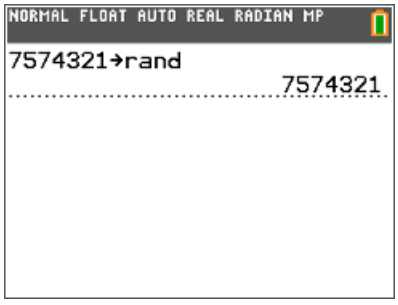
Students type in their phone numbers without area codes.

[math]

[enter]







Now I suggest you investigate the Prob Sim app. Very cool.

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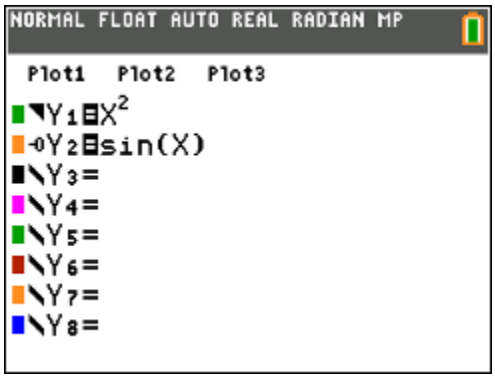
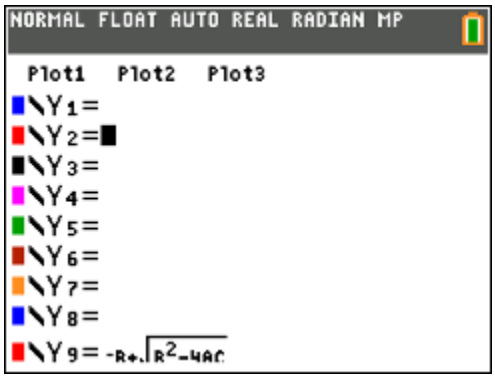
11. Double clear on y =.

Before. Notice that the color and format of the graph are not the default.

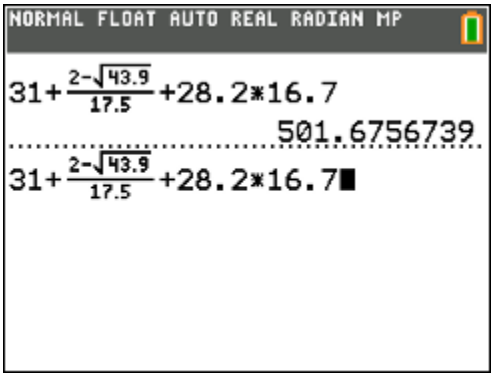


After. Press clear clear (yes twice) Notice that the expressions are cleared and the line style and color are reset to the default.

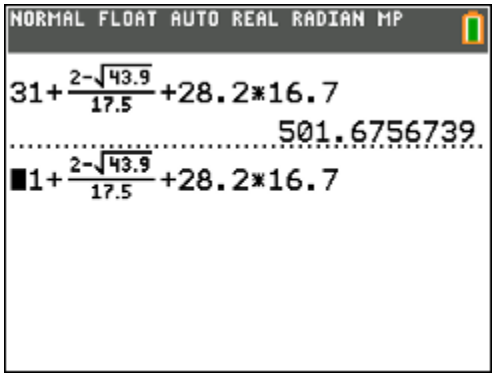


12. Nice editing feature when dealing with long expressions.

Notice that the blinking cursor is at the right end of the expression.



To quickly move the blinking cursor to the beginning (left end) of the expression, press 2nd ◄



Take a "wild guess" as to how to quickly move the blinking cursor to the right end! Yes, press 2nd ►.

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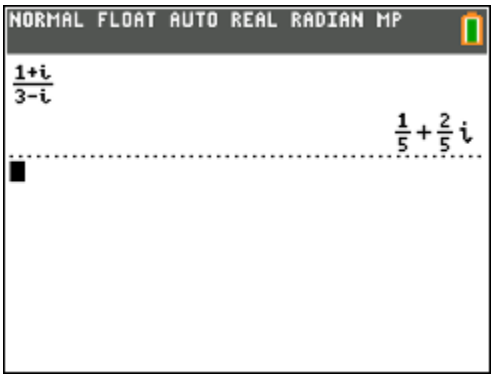
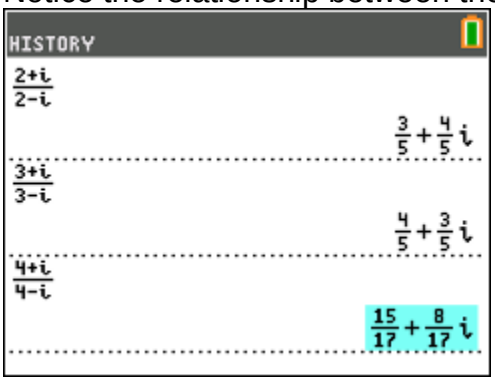
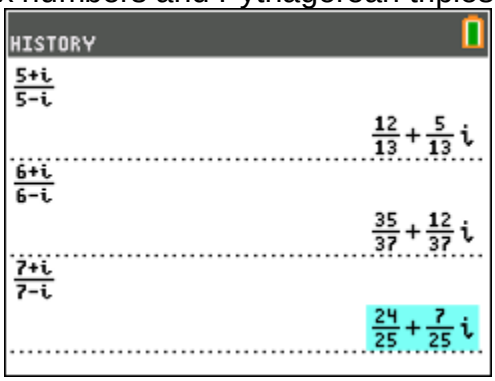
13. Complex numbers are supported using the fraction template: 10

Notice how complex number division is performed as long as the complex number is entered using the fraction template:



Notice the relationship between these complex numbers and Pythagorean triples:

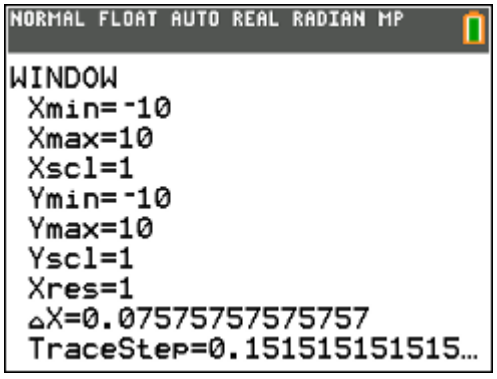


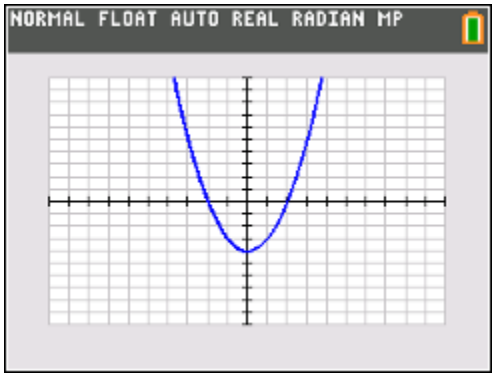


14. Use the stored values for x and y to your advantage.

Be aware that the values stored in the variables ‘x’ and ‘y’ change often and it is NOT a good idea to store values into those two variables.

See why. Below I graphed the following using the following standard window:





After graphing this equation using the standard window, **what values will be stored into the variable x?** … the variable y? See the next page for the answers.

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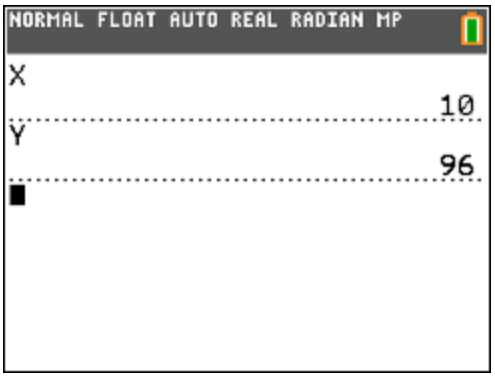
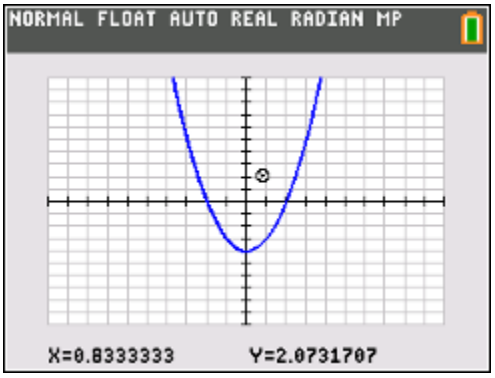


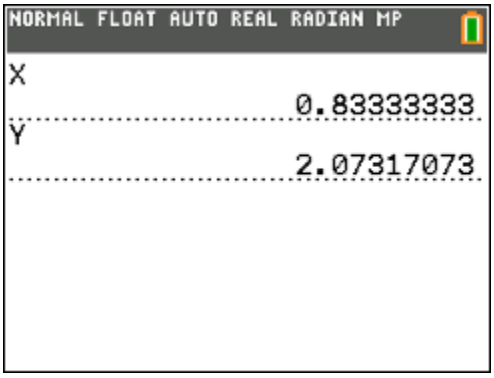
x = 10 and y = 96.
Can you figure out why?
Think about it.
The TI-84 graphs from left to right, starting with the Xmin and ending with the Xmax, which in this case is 10.
The y-values are calculated also left to right by substituting into y1. Since the last value of x substituted was x = 10, the last value for y is $(10)^2 - 4 = 96$. So x = 10 and y = 96.

Other places that store the values for x and y:

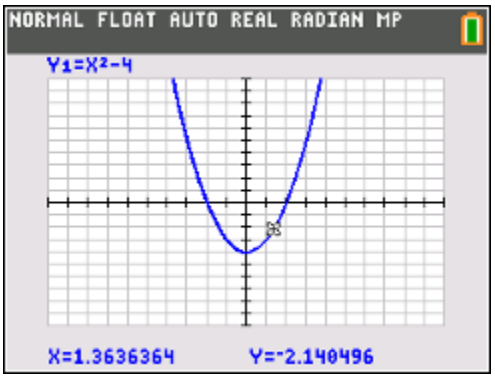
Below,on the graph screen, we pressed the right and up arrows to move the cursor. Notice the current values for x and y:



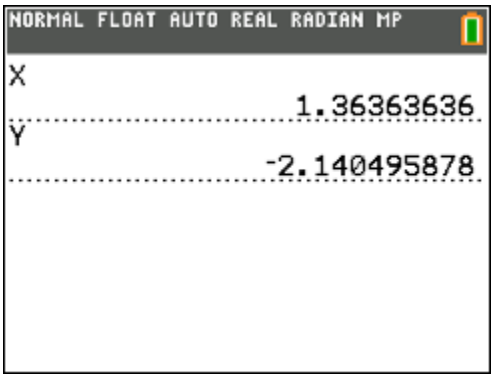
After doing that, I went to the home screen and asked for the current values for 'x' and 'y'. Look familiar? Notice more significant figures below.



A similar thing occurs when using Trace. See the values for x and y below while tracing.



Look at the values displayed for x and y.
Notice more significant figures below.



I strongly suggest that you store these values into other variables if you want to use them.

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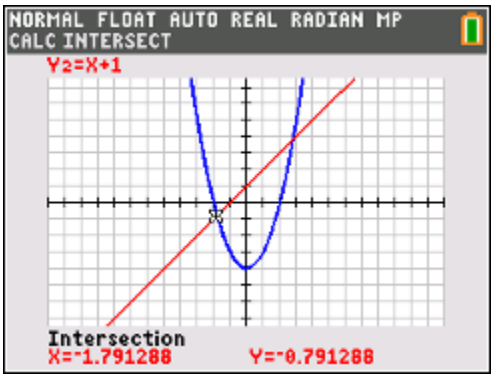
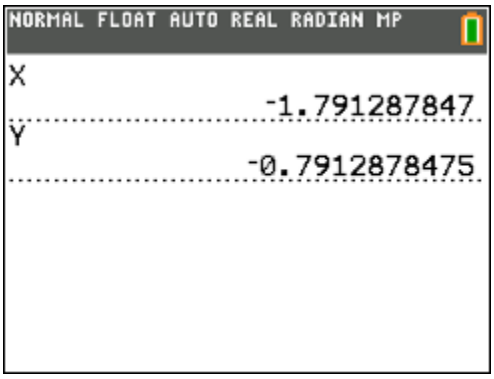
When finding the coordinates of points of intersection, you probably guessed it, but in case you didn't …

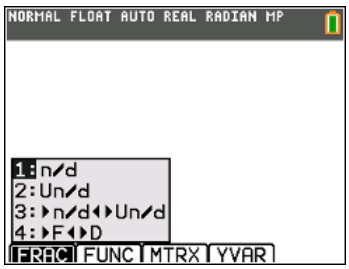




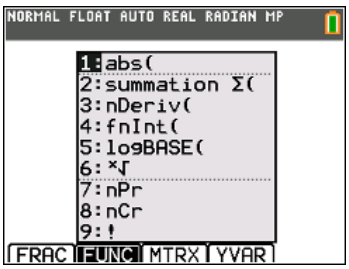
A similar situation occurs for finding maximums, minimums, zeros.

Again – reminder – don't use variables 'x' and 'y' store values as the values for 'x' and 'y'

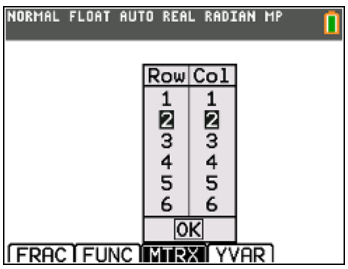
15. MathPrint Templates. Use alpha [f1] - [f4] to access the MathPrint Templates:



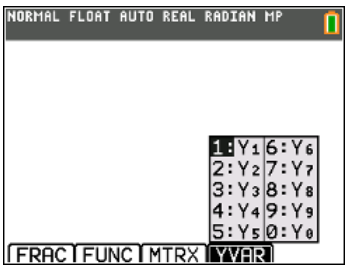
alpha [f1]



alpha [f2]



alpha [f3]



alpha [f4]

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