Activity:
Split Screen on the TI-83/84

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These instructions assume that you are familiar with the TI-83/84 calculators and that you have a basic understanding of how to use the graphing system on these calculators. You will be learning on how to advance you knowledge about graphing on these calculators by learning a method called split screen. This is a helpful method when you are trying to see you graph and look at your data at the same time instead of switching from one window to another.

Getting Started: Graphing in G-T mode

- We will first work on setting up our calculators so that we can graph functions on a split screen.
- On your calculator, press the [MODE] button to display the mode screen.
- On this screen, make sure that [Normal], [Float], [Radian], [Func], [Connected], [Sequential], [Real], and [G-T] are all highlighted.
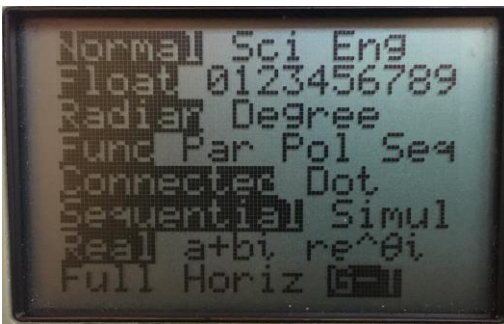- It should look like this:

Image 1

- After your mode looks like this, we will now change the format screen to be able to get this split screen graph so press [2nd] [QUIT].
- Now, press [2nd] [FORMAT] to get to the format screen
- From here the words that should be highlighted are [RectGC], [CoordOn], [GridOff], [AxesOn], [LabelOff], and [ExprOff].
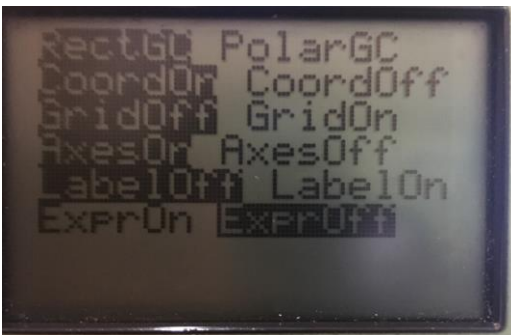- It should look like this:

Image 2

Split Screen on the TI-83/84

Graphing a Function in G-T (Graph-Table) Mode

- Press [Y=] on your calculator.
- In Y1 plug in the equation X+1 and in Y2 plug in the equation X^2.
- We will now change the dimensions of our graph so that we can see it better when we graph it.
- Hit [WINDOW] and the following numbers should be after each dimension:

Xmin= -10   Xmax= 10   Xscl= 1

Ymin= -10   Ymax= 10   Yscl= 1

Xres= 1

- Once these measurements are put in, press the [GRAPH] button to see both lines on the graphs and a table of X and Y1.
- Press [TRACE] to move your cursor along both lines to get the values depending on where the cursor is. Notice that the table automatically changes as you move your cursor along each line meaning that it will scroll to the data point that your cursor is on.
- It is also notable that depending on which line you are on, the table will either be X and Y1 or X and Y2 to give the given values of where your cursor is on that specific line.
- To manually make your graph switch from X and Y1 to X and Y2, press [2nd] [TABLE] to get to the data table and scroll up until you are highlighting Y1 and move the arrow to the right for it to change to Y2.
- Fill in these two tables by moving your cursor along the graphs:

X	Y1
	.1304
-.435	
0	1
.4348	
	1.87

| X	Y2
-.87	
	.189
0	0
.4348	
	.7561

- It is important to note how you can switch from the table and the graph when needed. To move to the graph on the left, press [TRACE] or [GRAPH] and your cursor will be able to move amongst your graph(s). To move to the table on the right, press [2nd] [TABLE] and you will be able to highlight any points.

**Split Screen on the
TI-83/84**

Graphing a Function in Horizontal Mode

- Another feature of the split-screen is that instead of dividing the screen vertically with your graph on the left and your table on the right, you can also have your graph on the top and the equations you plugged into [Y=], the window editor, table editor, stat list editor or the home screen.
- To access this feature, press [MODE] and at the bottom of your screen highlight [Horiz]. Refer to *Image 1* for assistance. (Note: the format screen will stay the same as in G-T mode)
- Next, press [GRAPH] to see the same function that we plugged into Y1 and Y2 being graphed on a horizontal screen.
- It should look like this:
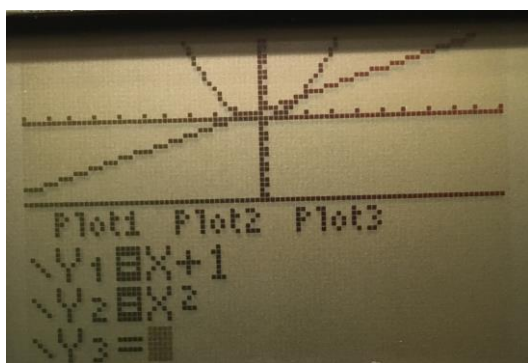
Image 3

- To see what equations we are looking at, press [Y=] and at the bottom of the screen you should see Y1=X+1 and Y2=X^2.
- We can also look at other properties of the graph, if you press [WINDOW] you can see and change the dimensions of your graph.
- To access your data table, hit [2nd] [TABLE] and there should be a data table that shows X, Y1, and Y2. This is helpful when you want to see all points without switching back and forth from Y1 and Y2.
- Also, if one were to edit their stat list using split screen, all you would have to do is press [STAT] and press [ENTER] where it says 1:Edit.
- To get to the home screen while still having your graph on top, press [2nd][QUIT]. You can then make any necessary calculations below your graph like you would normally do on your calculator.
- To move your cursor to the graph, press [GRAPH] or [TRACE]. You can also press [ZOOM] to zoom in on the graph as well as get your cursor back to the graph, and you can press [CALC] if you want to find the intersect of the graph for example.
- To move to the bottom of the screen, one would need to press any of the functions stated above like [Y=], [2nd][TABLE], [WINDOW], or [STAT][ENTER] to be able to move at the bottom of your screen.
- On both G-T and Horizontal screen, to get back to the home screen and out of graphing, press [MODE] and move all the way to the bottom and press enter on [Full]. Then press [2nd][QUIT] to return to the home screen of your calculator.

Split Screen on the TI-83/84

Exercises

1.) Graph the parametric equation of y=cos(x) and y=sin(x) in G-T and Horizontal split screen.

(Hint: Go to [MODE] and change it to [Degree] and [Par]. Press [ZOOM] and scroll down to 0:ZoomFit to make your graph look better.)

Which split screen looks better?_____

What does this graph remind you of? _____

2.) Graph the function y=x and y=x^3 in degrees and in the G-T Split screen. (Remember to change your [MODE] settings to fulfill this. Also, make your Xmin=-1, Xmax=1, Ymin=-2.5, and Ymax=2.5)

Draw both lines on the same graph below:

What is the intercept of these two graphs? _____

Now change the split screen into a horizontal one, what visual difference do you see between both

 graphs or is there not one? _____

3.) Graph y=1-sin(x), y=x^2-1, and y=x+1 in radians and in either G-T or Horizontal Split screen and in Radians.

(Make your window have Xmin=-4, Xmax=4, Ymin= -3, and Ymax=3)

Fill in the rest of the table:

Activity:
Split Screen on the TI-83/84

X	Y1	Y2	Y3
.1739			
	.659		
		-.728	
			1.696

Which split screen would be easiest to find all the data points for the table?_____

Draw all three lines on the same graph below: