Graphing More Than One Function MathPrint View

Objectives:

- Use and pronounce subscript notation
- Set MODE to graph two or more functions sequentially
- Graph more than one function in the Y= menu
- Set MODE to graph two or more functions simultaneously
- Turn graphs on and off without deleting them from the Y= menu

Use and pronounce subscript notation

Subscripts, written below the line, are often used in math for a list of similar items.

Example 1: The 1 in y_1 is a subscript, and y_1 is pronounced "y-sub-one".

The Y= menu uses subscript notation to identify each function.
The GC will graph up to ten functions, y_1, y_2, … y_9, y_0.

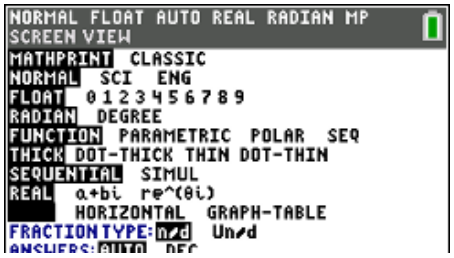
Set MODE to graph two or more functions sequentially

In the MODE menu, set graphing to SEQUENTIAL by pressing:

quit: mode ▼ ▼ ▼ ▼ ▼ entry solve: enter

Then quit: 2nd quit: mode

See:



PRO TIP: Use sequential graphing (in order y_1, y_2, … y_9, y_0) if you don't know how the functions look.

Graph more than one function in the Y= menu

Press statplot f1: y= to open the menu and ▼ or ▲ to move among the functions in the Y= menu.

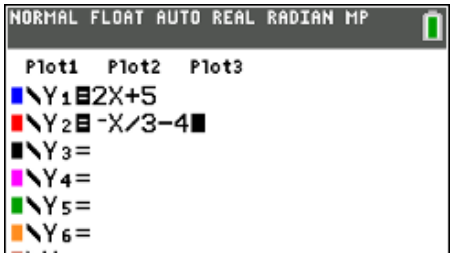
Example 2: Graph $y_1 = 2x + 5$ and $y_2 = -\frac{1}{3}x - 4$ in a standard window. Notice it graphs y_1 then y_2.

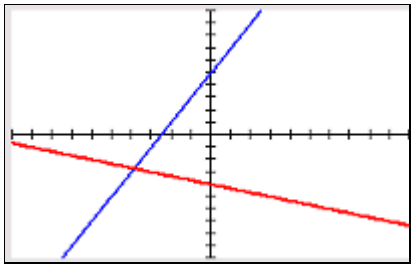
Solution:

To enter y_1, press: statplot f1: y= | clear | L2: 2 | Z link: X,T,θ,n | mem: + | " L5: 5 | U entry solve: enter [Slope 2 is positive so line goes uphill.]

For y_2, press: clear | ans: (–) | ? link: X,T,θ,n | e: ÷ | M L3: 3 | θ]: – | W L4: 4 | T entry solve: enter [Negative slope $-\frac{1}{3}$; goes down.]

To graph in the standard window, press: format f3 L6 V: zoom | 6.

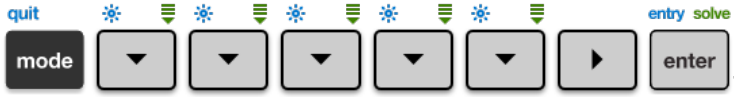
See: 



Set MODE to graph two or more functions simultaneously

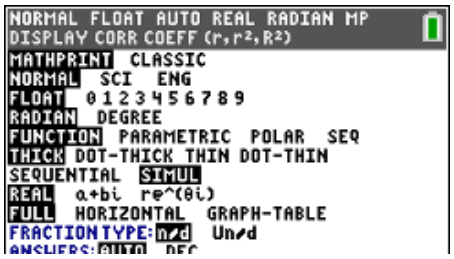
It can be quicker to graph functions simultaneously (all at once), rather than sequentially (one at a time.)

In the MODE menu, change SEQUENTIAL to SIMUL by pressing:



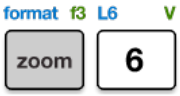
Then quit:

See:



Example 3: Graph $y_1 = 2x + 5$ and $y_2 = -\frac{1}{3}x - 4$ again. Notice it graphs both at once.

To graph in the standard window, press:



. See the same result as before.

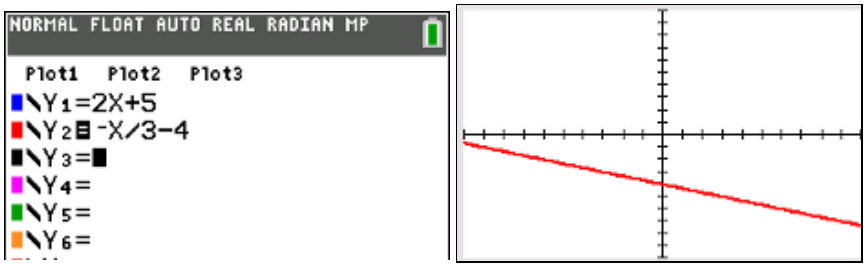
Turn graphs on and off without deleting them from the Y= menu

KEY CONCEPT: Pressing ENTER when the cursor is on the = symbol unselects (or re-selects) that graph!

Example 4: Turn off $y_1 = 2x + 5$ and graph only $y_2 = -\frac{1}{3}x - 4$.

Press

See:



CAUTION: Before you forget, turn it back on by pressing

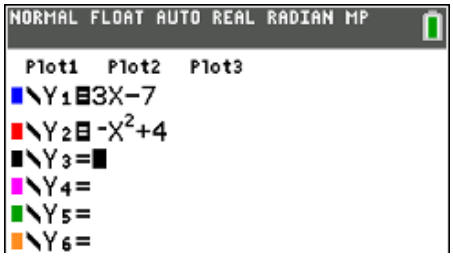
!

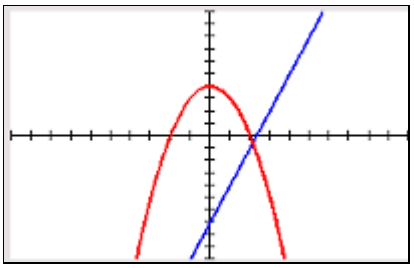
Try It!

1) Graph $y_1 = 3x - 7$ and $y_2 = -x^2 + 4$ simultaneously, in the standard window.
2) Graph $y_1 = 3x - 7$ and $y_2 = -x^2 + 4$ sequentially, in the standard window.
3) Graph $y_1 = 3x - 7$ and $y_2 = -x^2 + 4$, then turn off the graph for y_1 and graph only y_2.
4) Turn off the graph for y_2 in the previous question and graph only $y_1 = 3x - 7$
5) Graph $y_1 = 2x^2 + 3x + 1$, $y_2 = 2x^2 + 3x - 1$, $y_3 = 2x^2 + 3x + 4$ and $y_4 = 2x^2 + 3x - 4$ in the same window.
   Try sequential versus simultaneous, and turning graphs on and off.

Solutions:

1)





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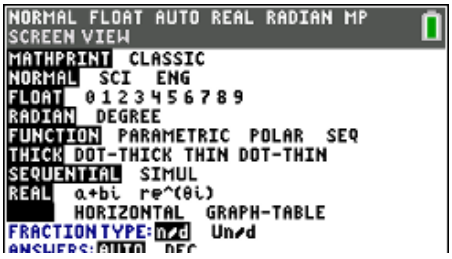
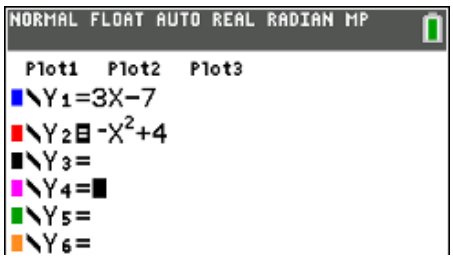
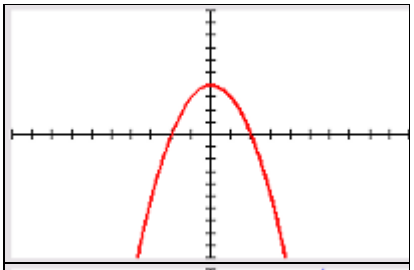


3)





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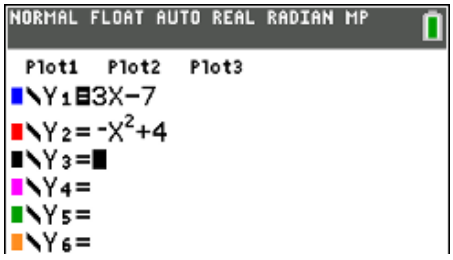

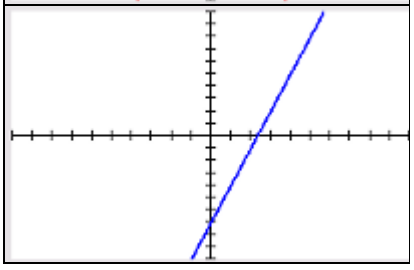

5)