

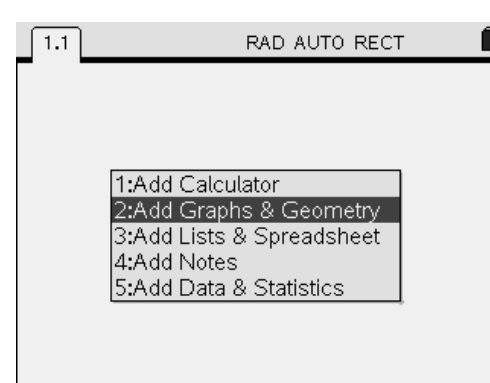
Plotting Piecewise Functions on the TI-Nspire™

Being able to visualize a piecewise function can greatly help in understanding the graph's behavior. However, the process of plotting piecewise functions by hand is not necessarily trivial. With a little work, we can use a graphing calculator to plot these functions and, at the same time, gain a visual guide to assist with plotting them by hand. We will explore graphing the following two piecewise functions on the TI-Nspire™ family of graphing calculators.

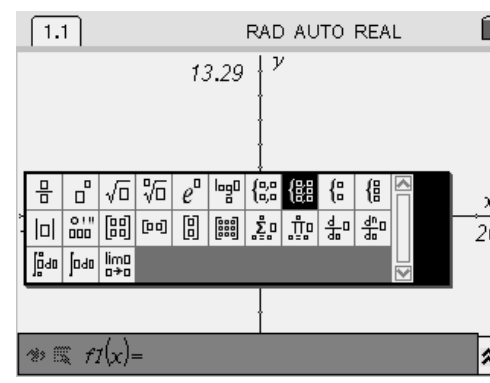
$$f(x) = \begin{cases} 2x, & x < 0 \\ x + 3, & x \geq 0 \end{cases} \qquad g(x) = \begin{cases} \sqrt[3]{x}, & x \leq -1 \\ x^2 - 3x, & -1 < x < 4 \\ \sqrt{x-4}, & x \geq 4 \end{cases}$$

Graphing $f(x)$:

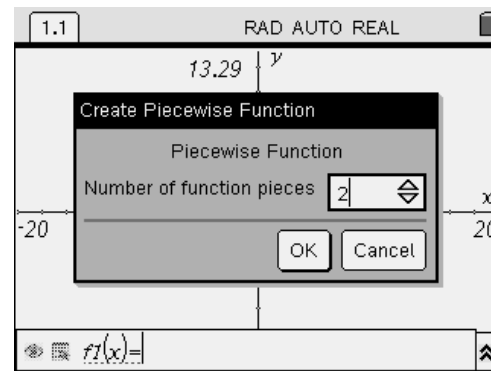
Either use a current Graphs page, or start a new page, problem, or document and choose “Add Graphs & Geometry”.



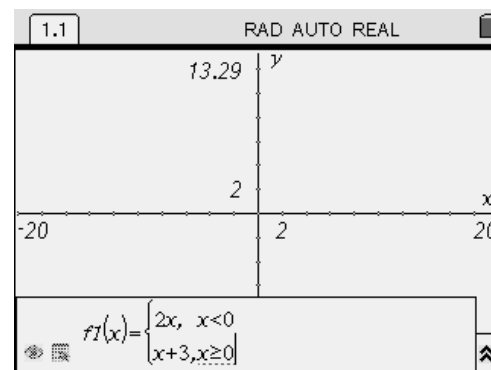
In the function bar at the bottom, press ctrl then $\left\{ \begin{matrix} \text{matrix icon} \\ x \end{matrix} \right\}$ for the Clickpad, or $\left\{ \begin{matrix} \text{matrix icon} \\ x \end{matrix} \right\}$ for the Touchpad. Select the icon that looks like a left brace with a 3x2 matrix beside it.



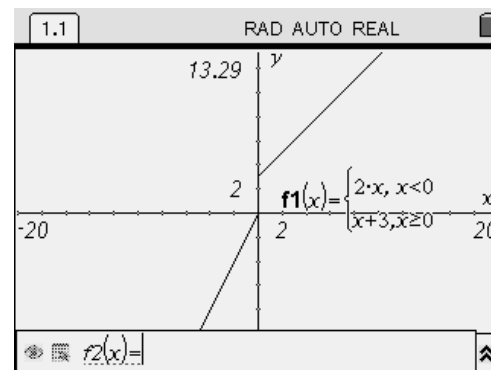
Enter “2” for the number of pieces.




Fill in the piecewise function. An easy way to get the “ \geq ” sign is to press **ctrl** and then “>” (Clickpad), or **ctrl** then “=” (Touchpad).



Press ENTER to display the graph.



Graphing $g(x)$:

Very similar to $f(x)$, just enter “3” for the number of pieces instead of “2”. Also, the TI-Nspire™ understands the condition “ $-1 < x < 4$ ”, so it can be entered in this way instead of using the “and” logic operator that the other calculators needed. (Note: the cube root symbol can be obtained by pressing  and then “^”.)

