


2 Functions

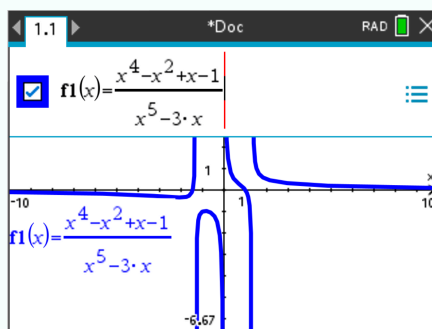
2.3 Graph a function

Suppose you want to have a good graphical understanding of the function



$$f(x) = \frac{x^4 - x^2 + x - 1}{x^5 - 3x}.$$


2.3.1 Put the function in your calculator

- ① Create a new document, select Add Graphs.
- ② Enter your function after 'f1(x)='. Then, press .




2.3.2 Display the graph of a function correctly

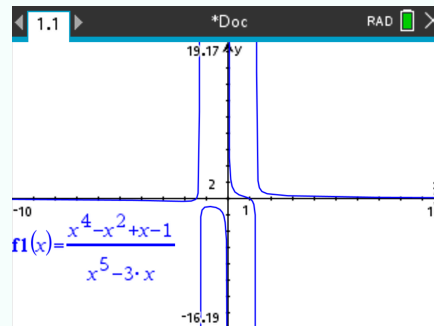
Tip1: Make sure only the functions you are using are displayed. To deactivate/activate a function's display, select , go to the function you want to activate/deactivate. Check/uncheck the square .


- ① Choose an appropriate window. To do that, press  and select Window /Zoom > Window Settings. Enter the appropriate values of Xmin, Xmax, Ymin and Ymax.


Choose an **XScale** more or less twenty times smaller than the gap between **Xmin** and **Xmax** (the role of **XScale** is to set the distance between tick marks on the x -axis). Usually we set **XScale** to be powers of 10.

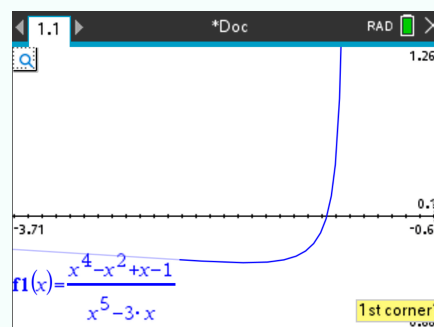
- ② Choose **Ymin** and **Ymax** according to the problem chosen. You want **Ymin** a bit smaller than the minimal y -value desired, and **Ymax** a bit above the maximal y -value desired.


If you do not know what y -values to choose, press  and select Window / Zoom > Zoom - Fit to make the y -values graph prettily. It should display this:



- ③ To display a specific part of the graph (here: the first local minimum), press  and select Window / Zoom > Zoom - Box.

Use the arrows to move to a point on the screen that you want the top left corner of the screen to be, and press .




- ④ If you wish to zoom out in order to zoom in to another part of the graph, press , select Window / Zoom > Zoom - Out.

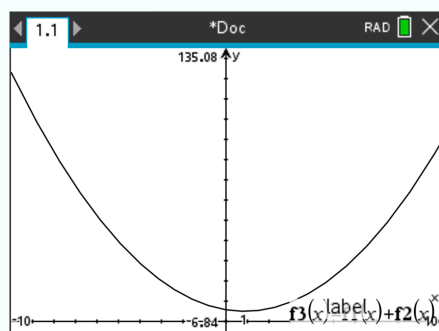
2.3.3 Graph the sum of functions

Suppose you want to graph the sum of the following functions:

$$f(x) = x^2 - 2x + 5$$

$$g(x) = \frac{x + 3}{4}.$$

- ① Enter the two functions after '**f1(x)=**' and '**f2(x)=**'.
- ② Enter a third function '**f3(x)=f1(x)+f2(x)**'. Uncheck '**f1(x)**' and '**f2(x)**'. Press . The sum of the two functions is displayed.



The same goes for subtraction, multiplication or division of two functions.