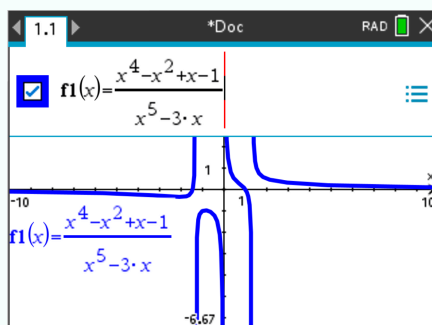## 2.3 Graph a function

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 [enter] .


### 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 [menu] 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 [menu] and select Window / Zoom > Zoom - Fit to make the $y-$values graph prettily. It should display this:
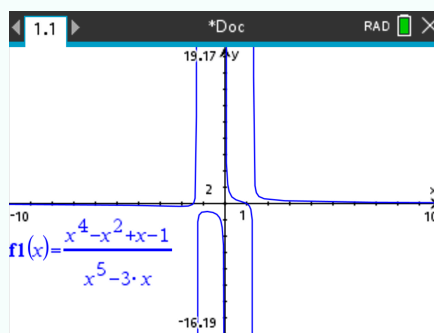
③ To display a specific part of the graph (here: the first local minimum), press [menu] and select Window / Zoom > Zoom - Box.

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 [enter] .
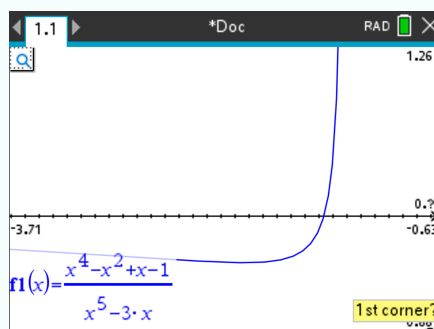
④ If you wish to zoom out in order to zoom in to another part of the graph, press [menu] , select Window / Zoom > Zoom - Out.
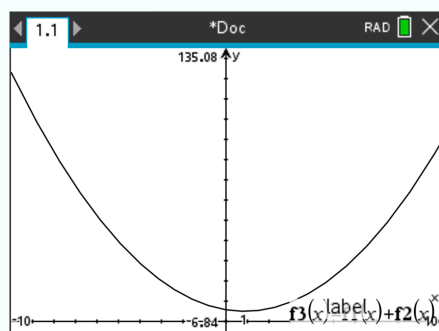
2.3.3   Graph the sum of functions

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

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

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 [enter] . The sum of the two functions is displayed.

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