





2.7 Composite functions

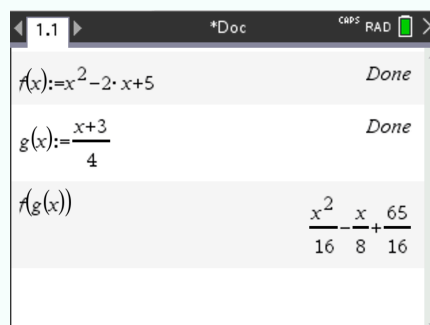
2.7.1 Graph the composition of two functions





Suppose you want graph $(f \circ g)(x)$ for the following functions:

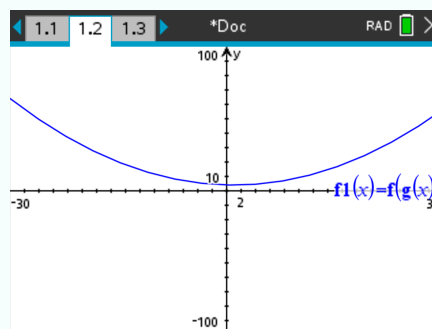
$$f(x) = x^2 - 2x + 5,$$

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

- ① Create a new document, press  and select Add Calculator.
- ② Enter the two expressions $f(x)$ and $g(x)$, each in a different line. To do this, write '**f(x)**' and press  then . Then, write the expression function of x. Do the same for $g(x)$.
- ③ Write '**f(g(x))**' in a third line and press . The result is displayed:



- ④ To plot the function, open a new page by pressing  then . Select Add Graphs.
- ⑤ Write '**f1(x)=f(g(x))**' and press .
- ⑥ Choose an appropriate window. To do that, press  and select Window /Zoom > Window Settings. Enter the appropriate values of Xmin, Xmax, Ymin and Ymax. The following graph should be displayed (with **Xmin=-30, Xmax=30, Ymin=-100, Ymax=100**):







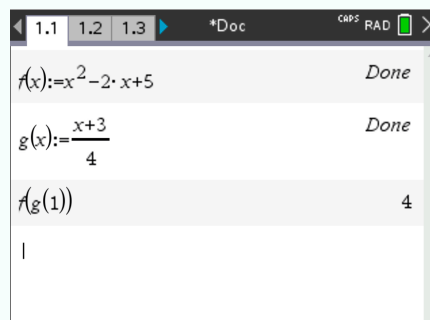
2.7.2 Compute specific value of the composition of two functions

Suppose you want to evaluate $(f \circ g)(1)$ for the following functions:

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

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

- ① Create a new document, press  and select Add Calculator.
- ② Enter the two expressions $f(x)$ and $g(x)$, each in a different line. To do this, write '**f(x)**' and press  then . Then, write the expression function of x. Do the same for $g(x)$.
- ③ Write '**f(g(1))**' in a third line and press . The result is displayed:



The result should be 4. Thus $(f \circ g)(1) = 4$.