

Working with composite functions is easy using Classpad.

Start in Main by defining f and g as shown.

$$f(x) = 2x - 1$$

$$g(x) = x^2 - 4x + 6$$

This screen shows the value of $f(g(1))$

Define $f(x) = 2x - 1$ done

Define $g(x) = x^2 - 4x + 6$ done

□

Math1 Line $\frac{\square}{\square}$ $\sqrt{\square}$ π \rightarrow

Math2 Define f g i ∞

Math3 solve(dSlv ' $\left\{ \begin{matrix} \square \\ \square \end{matrix} \right\}$ |

Trig < > () { } []

Var \leq \geq = \neq \angle

abc \leftarrow \rightarrow ans EXE

Alg Decimal Real Deg $\left[\text{MODE} \right]$

Define $f(x) = 2x - 1$ done

Define $g(x) = x^2 - 4x + 6$ done

$f(g(1))$ 5

□

Math1 Line $\frac{\square}{\square}$ $\sqrt{\square}$ π \rightarrow

Math2 Define f g i ∞

Math3 solve(dSlv ' $\left\{ \begin{matrix} \square \\ \square \end{matrix} \right\}$ |


Trig < > () { } []

Var \leq \geq = \neq \angle

abc \leftarrow \rightarrow ans EXE

Alg Decimal Real Deg $\left[\text{MODE} \right]$

Determine $g(f(x))$.

It often pays to tap .

To graph a compound function, simply drag $g(f(x))$ into the graph window or in the graph and table application, enter $Y1 = g(f(x))$.

Define $f(x) = 2x - 1$ done

Define $g(x) = x^2 - 4x + 6$ done

$f(g(1))$ 5

$g(f(x))$ 5

$(2 \cdot x - 1)^2 - 4 \cdot (2 \cdot x - 1) + 6$

simplify(ans) $4 \cdot x^2 - 12 \cdot x + 11$

□

Math1 Line $\frac{\square}{\square}$ $\sqrt{\square}$ π \rightarrow

Math2 Define f g i ∞

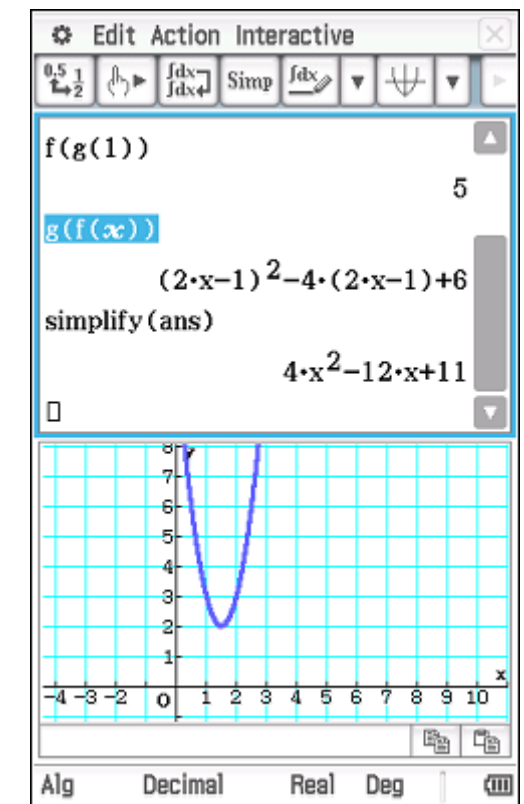
Math3 solve(dSlv ' $\left\{ \begin{matrix} \square \\ \square \end{matrix} \right\}$ |

Trig < > () { } []

Var \leq \geq = \neq \angle

abc \leftarrow \rightarrow ans EXE

Alg Decimal Real Deg $\left[\text{MODE} \right]$



There may be another function h such that $g(h) = 4x^2 - 12x + 11$.

Solve the resulting equation for h .

Note the second solution

Start by entering $g(h) = 4x^2 - 12x + 11$

$h(x) = -2x + 5$.

Edit Action Interactive
 Define $f(x) = 2x - 1$ done
 Define $g(x) = x^2 - 4x + 6$ done
 $f(g(1))$ 5
 $g(f(x))$
 $(2 \cdot x - 1)^2 - 4 \cdot (2 \cdot x - 1) + 6$
 simplify(ans)
 $4 \cdot x^2 - 12 \cdot x + 11$
 $g(h) = 4 \cdot x^2 - 12 \cdot x + 11$
 $h^2 - 4 \cdot h + 6 = 4 \cdot x^2 - 12 \cdot x + 11$
 □

Edit Action Interactive
 $g(f(x))$ 5
 $(2 \cdot x - 1)^2 - 4 \cdot (2 \cdot x - 1) + 6$
 simplify(ans)
 $4 \cdot x^2 - 12 \cdot x + 11$
 $g(h) = 4 \cdot x^2 - 12 \cdot x + 11$
 $h^2 - 4 \cdot h + 6 = 4 \cdot x^2 - 12 \cdot x + 11$
 solve(ans, h)
 $\{h = -|2 \cdot x - 3| + 2, h = |2 \cdot x - 3| + 2\}$
 $h = -(2 \cdot x - 3) + 2$ $h = -2 \cdot x + 5$
 $h = (2 \cdot x - 3) + 2$ $h = 2 \cdot x - 1$
 □