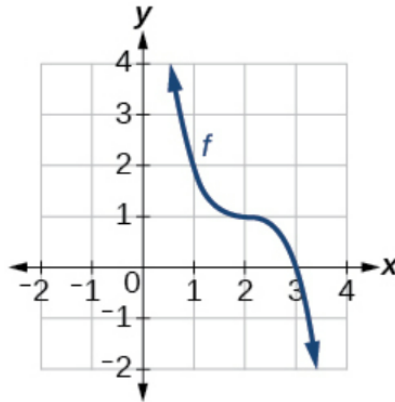


## Exercise 44

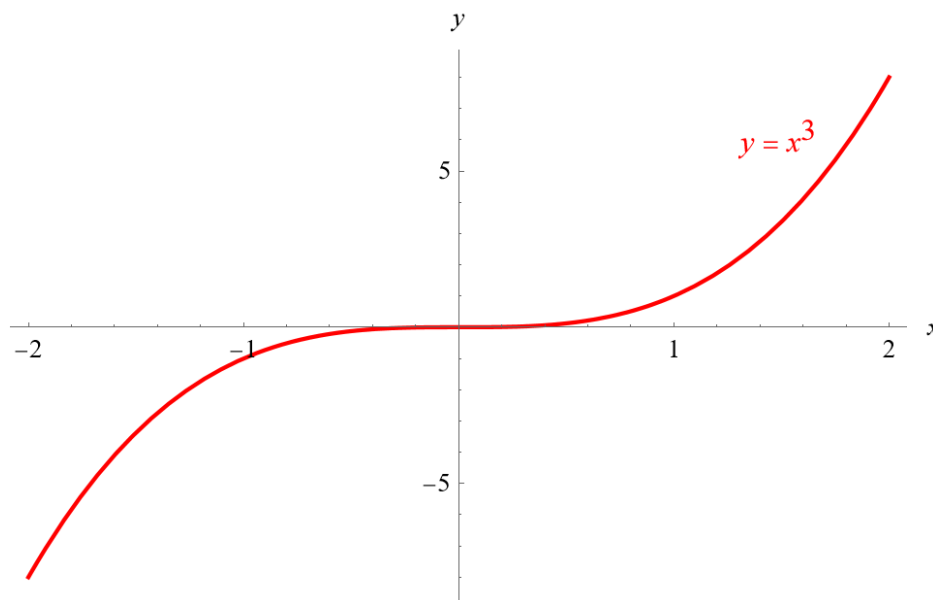
For the following exercises, use the graphs of the transformed toolkit functions to write a formula for each of the resulting functions.



### Solution

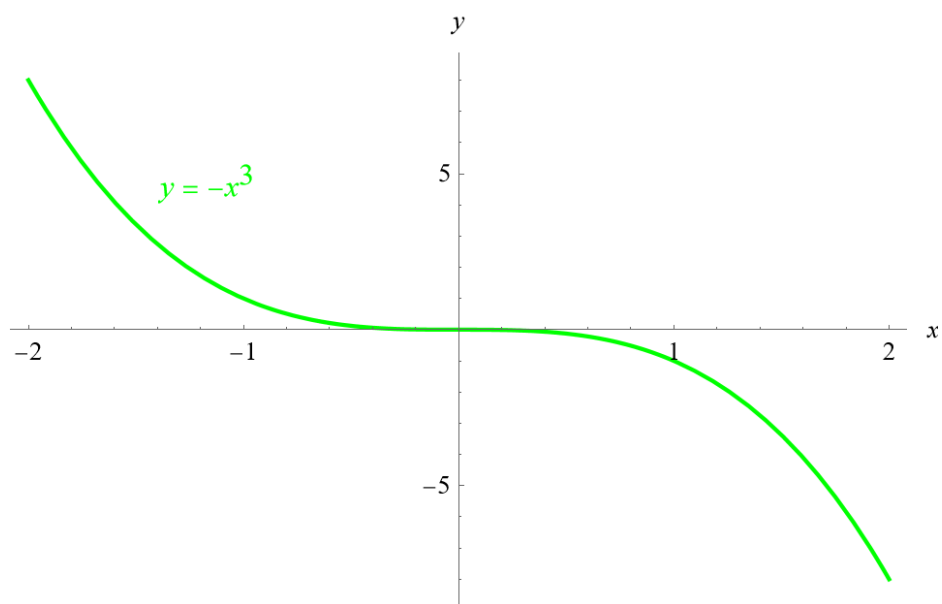
This is cubic function that's been reflected over the  $x$ -axis, shifted to the right by 2 units, and shifted up by 1 unit. Start with the function of a standard cubic function.

$$y = x^3$$



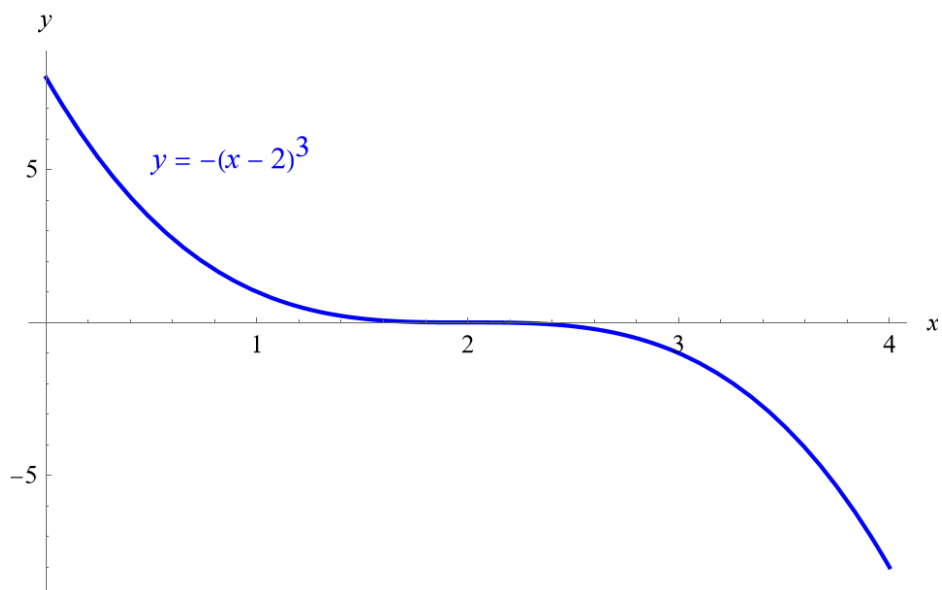
Reflect it over the  $x$ -axis.

$$y = -x^3$$



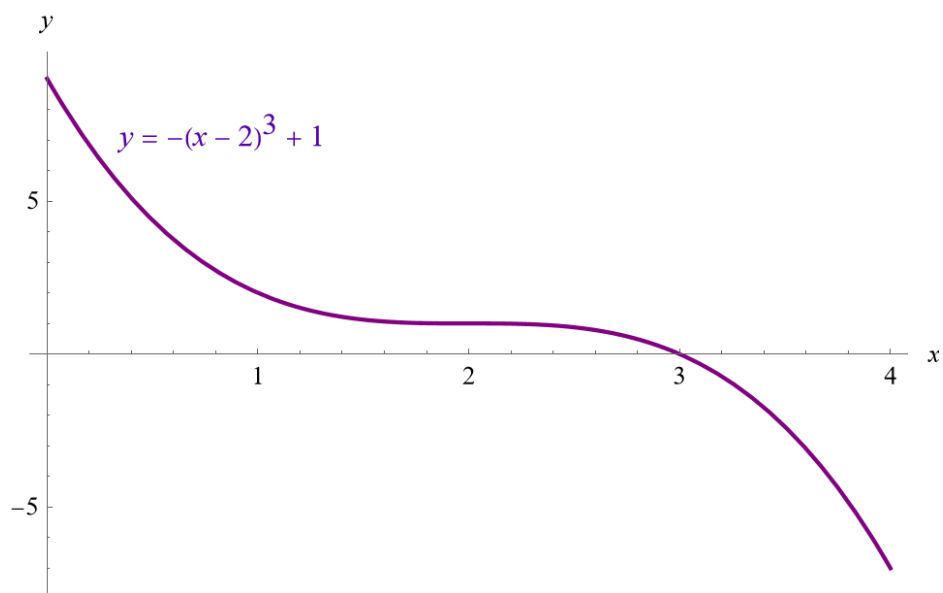
Shift it to the right by 2 units.

$$y = -(x - 2)^3$$



Shift it up by 1 unit.

$$y = -(x - 2)^3 + 1$$



$$f(x) = -(x - 2)^3 + 1$$