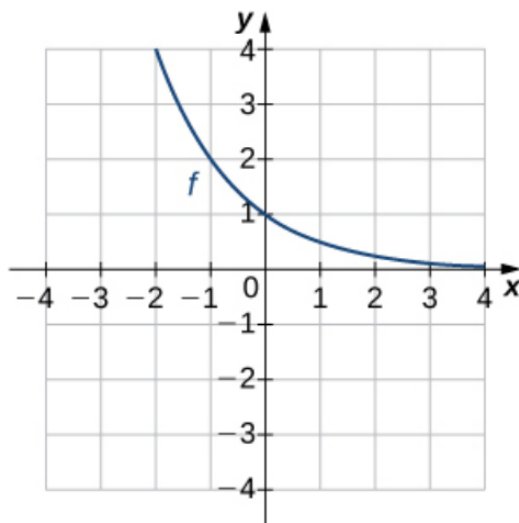


## Exercise 196

For the following exercises, use the graph of  $f$  to sketch the graph of its inverse function.



### Solution

The function graphed in the figure is

$$f(x) = 2^{-x}.$$

To find the inverse function, replace  $x$  with  $y$  and replace  $f(x)$  with  $x$ .

$$x = 2^{-y}$$

Solve for  $y$ .

$$\ln x = \ln 2^{-y}$$

$$\ln x = -y \ln 2$$

$$y = -\frac{\ln x}{\ln 2}$$

Both functions are plotted together versus  $x$  below. Notice that they are reflections of each other across the line  $y = x$ .

