Exercise 79

If $f(5) = 2$, find $f^{-1}(2)$.

Solution

Assume that f is a one-to-one function (meaning that it has an inverse) and that

$$f(5) = 2.$$

Apply f^{-1} to both sides.

$$f^{-1}(f(5)) = f^{-1}(2)$$

The function and its inverse cancel out on the left side, leaving 5.

$$5 = f^{-1}(2)$$

Therefore,

$$f^{-1}(2) = 5.$$