

## Section 2.7 Inverse Functions

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### Definition of the Inverse of a Function

Let  $f$  and  $g$  be two functions such that

$$f(g(x)) = x \quad \text{for every } x \text{ in the domain of } g$$

and

$$g(f(x)) = x \quad \text{for every } x \text{ in the domain of } f.$$

The function  $g$  is the **inverse of the function  $f$**  and is denoted by  $f^{-1}$  (read "f-inverse"). Thus,  $f(f^{-1}(x)) = x$  and  $f^{-1}(f(x)) = x$ . The domain of  $f$  is equal to the range of  $f^{-1}$ , and vice versa.

Example 1: Find  $f(g(x))$  and  $g(f(x))$  and determine whether each pair of functions  $f$  and  $g$  are inverses of each other.