NAME _____

DATE _____

Module 9   Using Functions
Lesson 6   Evaluating Composite Functions

Lesson Objectives

• Find compositions of two functions.
• Identify functions that are inverses by using composition of functions.

The Composition of Two Functions

$(f \circ g)(x) = $ _____

The symbol $\circ$ is used for the composition of two functions.

$(f \circ g)(x)$ and $f(g(x))$ are both read _____.

1 Evaluate $(f \circ g)(4)$ and $(g \circ f)(4)$.

$f(x) = x + 7$

$g(x) = 5x$

$(f \circ g)(4) = $ _____

$(g \circ f)(4) = $ _____

2 Evaluate $f(g(4))$ and $g(f(4))$.

$f(x) = 3x$

$g(x) = 3x$

$f(g(4)) = $ _____

$g(f(4)) = $ _____

3 Evaluate $f(g(9))$ and $g(f(9))$.

$f(x) = \sqrt{x}$

$g(x) = x^2$

$f(g(9)) = $ _____

$g(f(9)) = $ _____

4 ▶ Find $(f \circ g)(x)$ and $(g \circ f)(x)$.

$f(x) = x + 7$

$g(x) = 5x$

$(f \circ g)(x) =$ _____

$(g \circ f)(x) =$ _____

5 ▶ Find $f(g(x))$ and $g(f(x))$.

$f(x) = \sqrt{x}$

$g(x) = x^2$

$f(g(x)) =$ _____

$g(f(x)) =$ _____

Two functions f and g are called _____ functions, if and only if,

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

and

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

6 ▶ Determine if the following two functions are inverses of each other.

$f(x) = 2x$

$g(x) = \frac{x}{2}$

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