

## 6.1 Day 2

**Composition of Functions:**  $f \circ g(x)$  can be described by the equation  $[f \circ g](x) = f[g(x)]$

In composition of functions, the \_\_\_\_\_ of the first (inside) function is used as the \_\_\_\_\_ to evaluate the second (outside) function. The \_\_\_\_\_ of the inside (first) function must be within the \_\_\_\_\_ of the outside (second) function.

**Example 4:** If  $f(x) = \{(1, 2), (3, 3), (2, 4), (4, 1)\}$  and  $g(x) = \{(1, 3), (3, 4), (2, 2), (4, 1)\}$

**Find:**  $f[g(1)] =$   $g[f(1)] =$

$f[g(2)] =$   $g[f(2)] =$

**Find:**  $f[g(3)] =$   $g[f(3)] =$

$f[g(4)] =$   $g[f(4)] =$

**Example 5.** If  $f(x) = x + 4$ , and  $g(x) = x^2 - 1$ , find each value.

$f[g(1)] =$   $g[f(1)] =$   $f[g(2)] =$   $g[f(2)] =$

**Example 6.** If  $f(x) = 5x + 4$ ;  $g(x) = 3 - x$ , find:

$[f \circ g](x) =$   $[g \circ f](x) =$

**Example 7.** If  $g(x) = 3x - 4$  and  $h(x) = x^2 - 1$ , find:

$[g \circ h](x) =$   $[h \circ g](x) =$

### 6.1 Day 2 Skills Practice

Find  $[f \circ g](x)$  and  $[g \circ f](x)$

4.  $f(x) = -3x$ ;  $g(x) = -x + 8$

5.  $f(x) = x^2 - 1$ ;  $g(x) = -4x^2$

6.  $f(x) = x^2 + 2x$ ;  $g(x) = x - 9$

7.  $f(x) = 8x^2 + 3x$ ;  $g(x) = 2x^2$

If  $f(x) = 3x$ ,  $g(x) = x + 4$ , and  $h(x) = x^2 - 1$ , find each value.

8.  $f[g(1)]$

9.  $g[h(0)]$

10.  $g[f(-1)]$

11.  $h[f(5)]$

12.  $g[h(-3)]$

13.  $h[f(10)]$

If  $f = \{(0,0), (4,-2)\}$  and  $g = \{(0,4), (-2,0), (5,0)\}$ , find:

14.  $f[g(5)]$

15.  $g[f(4)]$