

NAME _____

Module 9 Using Functions
Lesson 6 Evaluating Composite Functions



**additional
practice**

Evaluate.

1. $(f \circ g)(3)$ and $(g \circ f)(3)$

$f(x) = x + 1$

$g(x) = -2x$

$(f \circ g)(3) = -5$

$(g \circ f)(3) = -8$

3. $(f \circ g)(4)$ and $(g \circ f)(4)$

$f(x) = 3x - 2$

$g(x) = 2x + 2$

$(f \circ g)(4) = 28$

$(g \circ f)(4) = 22$

5. $(f \circ g)(-6)$ and $(g \circ f)(-6)$

$f(x) = x^2 + 5$

$g(x) = x + 4$

$(f \circ g)(-6) = 9$

$(g \circ f)(-6) = 45$

7. $(f \circ g)(-1)$ and $(g \circ f)(-1)$

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

$g(x) = x^2 + 3$

$(f \circ g)(-1) = 2$

$(g \circ f)(-1)$ is undefined

2. $(f \circ g)(0)$ and $(g \circ f)(0)$

$f(x) = x - 4$

$g(x) = x + 1$

$(f \circ g)(0) = -3$

$(g \circ f)(0) = -3$

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

$f(x) = x^2 - 2$

$g(x) = x^3$

$(f \circ g)(-1) = -1$

$(g \circ f)(-1) = -1$

6. $(f \circ g)(10)$ and $(g \circ f)(10)$

$f(x) = \frac{x+5}{2x}$

$g(x) = x - 5$

$(f \circ g)(10) = 1$

$(g \circ f)(10) = -4\frac{1}{4}$

8. $(f \circ g)(7)$ and $(g \circ f)(7)$

$f(x) = x^2 - 20$

$g(x) = x - 20$

$(f \circ g)(7) = 149$

$(g \circ f)(7) = 9$

For each pair of functions, find $f(g(x))$ and $g(f(x))$.

9. $f(x) = x - 3$
 $g(x) = 4x$

$f(g(x)) = 4x - 3$

$g(f(x)) = 4x - 12$

11. $f(x) = \frac{3}{4}x$
 $g(x) = 8x$

$f(g(x)) = 6x$

$g(f(x)) = 6x$

13. $f(x) = \sqrt{x - 5}$
 $g(x) = x^2$

$f(g(x)) = \sqrt{x^2 - 5}$

$g(f(x)) = x - 5$

15. $f(x) = \frac{x}{x - 4}$
 $g(x) = x - 5$

$f(g(x)) = \frac{x - 5}{x - 9}$

$g(f(x)) = \frac{x}{x - 4} - 5$

10. $f(x) = x + 6$
 $g(x) = x - 5$

$f(g(x)) = x + 1$

$g(f(x)) = x + 1$

12. $f(x) = 3x$
 $g(x) = 2x^2$

$f(g(x)) = 6x^2$

$g(f(x)) = 18x^2$

14. $f(x) = 3x$
 $g(x) = x^2 + 6$

$f(g(x)) = 3x^2 + 18$

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

16. $f(x) = -6$
 $g(x) = \sqrt{x - 6}$

$f(g(x)) = -6$

$g(f(x))$ is undefined

Determine whether the given functions are inverse functions.

17. $f(x) = x - 7$
 $g(x) = x + 7$

$f(g(x)) = x$

$g(f(x)) = x$

The functions ARE inverses.

18. $f(x) = x + 2$
 $g(x) = 2x$

$f(g(x)) = 2x + 2$

$g(f(x)) = 2x + 4$

The functions are NOT inverses.

19. $f(x) = 3x$
 $g(x) = \frac{10}{3}x + 10$

$f(g(x)) = 10x + 30$

$g(f(x)) = 10x + 10$

The functions are NOT inverses.

20. $f(x) = \frac{1}{5}x - 4$
 $g(x) = 5x + 20$

$f(g(x)) = x$

$g(f(x)) = x$

The functions ARE inverses.