

Composition of Functions (Assignment 20)

Let $f(x) = 2x - 1$, $g(x) = 3x$, and $h(x) = x^2 + 1$. Compute the following:

1. $f(g(-2))$

2. $f(h(5))$

3. $g(h(3))$

4. $(f \circ h)(4)$

5. $(g \circ f)(-1)$

6. $(h \circ g)(0)$

7. $f(h(g(1)))$

8. $g(h(f(1)))$

9. $(h \circ g \circ f)(1)$

10. Let $f(x) = 5x$. Find a function, $g(x)$, so that $g(f(x)) = x$. (For example, your function, g , should be such that $g(f(3)) = 3$ and $g(f(7)) = 7$, etc.)

Let $f(x) = 9 - x$. Compute the following:

11. $f(f(5))$

12. $f(f(7))$

13. $f(f(-1))$

14. Based on your answers the previous questions, what must $f(f(x^5))$ equal. (Your answer should not be a number, it should be an expression with x .)

Let $g(x) = x^2 + x$. Compute the following:

15. $(g \circ g)(-1)$

16. $(g \circ g \circ g \circ g)(-1)$