

Composition of Functions Homework

Given $f(x) = 3x + 1$ and $g(x) = x^3$, find each value.

1. $f(g(2))$
 $f(8) = \boxed{25}$

2. $(g \circ f)(2) = g(f(2))$
 $g(7) = 7^3 = \boxed{343}$

3. $f(g(-3))$
 $(-3)^3 = -27$
 $f(-27) = 3(-27) + 1 = -81 + 1 = \boxed{-80}$

Given $f(x) = x - 5$ and $g(x) = x^2 + 2x + 3$, find each value.

4. $(f \circ g)(x)$
 $f(g(x)) = x^2 + 2x + 3 - 5 = \boxed{x^2 + 2x - 2}$

5. $(g \circ f)(x)$
 $g(f(x)) = (x-5)^2 + 2(x-5) + 3 = x^2 - 10x + 25 + 2x - 10 + 3 = \boxed{x^2 - 8x + 18}$

6. Evaluate $(f \circ g)(x)$ and $(g \circ f)(x)$ for $x = -3$
 $(f \circ g)(-3) = 9 - 6 - 2 = \boxed{1}$
 $(g \circ f)(-3) = 9 + 24 + 18 = 33 + 18 = \boxed{51}$

Given $f(x) = 4x$ and $g(x) = 2x - 1$, find each value.

7. $f(g(-1))$
 $f(-3) = \boxed{-12}$

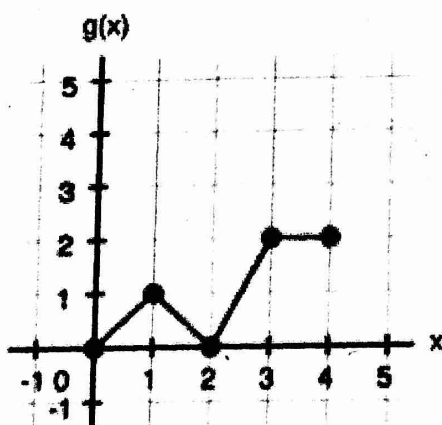
8. $g(g(7))$
 $g(13) = \boxed{25}$

Given $f(x) = 5x + 2$ and $g(x) = \frac{2}{x-1}$, write each composite function.

9. $(f \circ g)(x) = 5\left(\frac{2}{x-1}\right) + 2 = \boxed{\frac{10}{x-1} + 2}$

10. $(g \circ f)(x) = \frac{2}{5x+2-1} = \boxed{\frac{2}{5x+1}}$

$f(x) = 3x + 4$



x	h(x)
-1	2
0	1
1	4
2	0
3	6

11. $f(g(0)) = \boxed{4}$

12. $h(g(2)) = \boxed{1}$

13. $(g \circ f)(0) = \boxed{2}$

14. $(g \circ h)(-1) = \boxed{0}$