

2.REV.2 - BUILDING FUNCTIONS REVIEW

True or false? If false, explain your reasoning.

1. If $h(7) = 4$ and h is invertible, then $h^{-1}(4) = 7$.
2. If $f(x) = \frac{3}{4}x - 6$ then $f^{-1}(8) = 0$.
3. The functions $f(x) = 2x + 1$ and $g(x) = 0.5x - 1$ are inverses.
4. If $f(x) = x^2 + 2$, then $f(f(1)) = 11$.
5. The function $f(x)$ in the table (at the right) could be concave up.

x	-2	0	2	4
$f(x)$	5	6	8	12

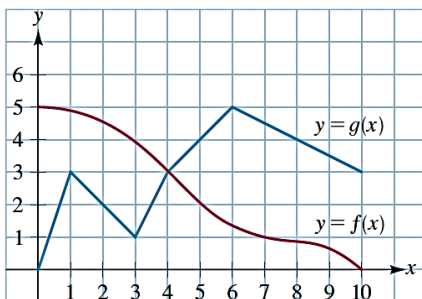
6. If $f(x) = x^2$ & $g(x) = \sqrt{x + 3}$, then $f(g(6)) = 9$.
7. If $h(p) = -6p + 9$, then $h(3) + h(4) = h(7)$.
8. Given the piecewise function: $f(x) = \begin{cases} x + 2 & 0 \leq x \leq 2 \\ 5 - x & 2 < x \leq 8 \end{cases}$
Evaluate $f(f(4))$

9. Use the table for $g(x)$ to find the function values.

- a. $g(-7) = ?$
- b. $g(?) = 9$
- c. $g^{-1}(?) = -1$
- d. $g^{-1}(-1) = ?$

x	-10	-7	-4	-1	2
$g(x)$	3	19	-1	4	9

10. Refer to the graphs of the functions $f(x)$ & $g(x)$ in the following figure and use them to find the function values.



- a. Solve: $g(x) = 4$
- b. Solve: $f(x) = 4$
- c. $f^{-1}(2)$
- d. Solve: $f(x) = g(x)$
- e. $f(g(6))$
- f. $g(f(0))$
- g. $f(f(10))$
- h. $g(f(7))$
- i. $(f + g)(5)$
- j. $(fg)(3)$

Evaluate, solve, or find the indicated formula using the following functions:

$$f(x) = x^2 - 9 \quad g(x) = 2x - 3 \quad h(x) = \frac{6}{3x + 2} \quad j(x) = \sqrt{1 - 5x} \quad k(x) = x + 1$$

11. $k(g(4))$

12. $f(h(-1))$

13. $j^{-1}(-6) = ?$

14. $g^{-1}(x) = 9$

15. $2g(x) - 3f(x)$

16. $g(x) \cdot f(x)$

17. $f(j(x))$

18. $h(g(x))$

19. $h^{-1}(x)$

20. $j^{-1}(x)$

21. $g^{-1}(x)$

22. $f(k(x))$