Unit 8.1 Functions and Inverse Functions

1. Compute the following if $f(x) = 2x + 1$
   a. $f(4)$

   b. $f(0)$

   c. $f(-1)$

2. Compute the following if $f(x) = 4x$ and $g(x) = x + 5$
   a. find $(f \cdot g)(x)$

   b. find $(f \circ g)(x)$

   c. find $(g \circ f)(x)$

3. find $h(a(m))$ if $h(m) = 2m + 1$ and $a(m) = 9m^2 + 4$

4. find $(g \circ f)(1)$ if
   $f(x) = 2x + 5$
   $g(x) = \frac{x - 5}{2}$

5. Find $(f - h)(x)$ if $f(x) = 3x^2$ and $h(x) = x^2$

6. Find $\frac{f}{g}(x)$ if $f(x) = 2x + 3$ and $g(x) = 5x - 6$ then evaluate for $x = -2$

7. Find $(f \circ g)(x)$ and $(g \circ f)(x)$ if $f(x) = x^2 - 4x + 1$ and $g(x) = 2x - 4$

8. Find $(f \circ g)(x)$ and $(g \circ f)(x)$ if $f(x) = x^2 + 4$ and $g(x) = \sqrt{x - 3}$

9. Given the function $f(x) = 3x^2 + 4x + 1$ find the following values
    a. $f(w)$

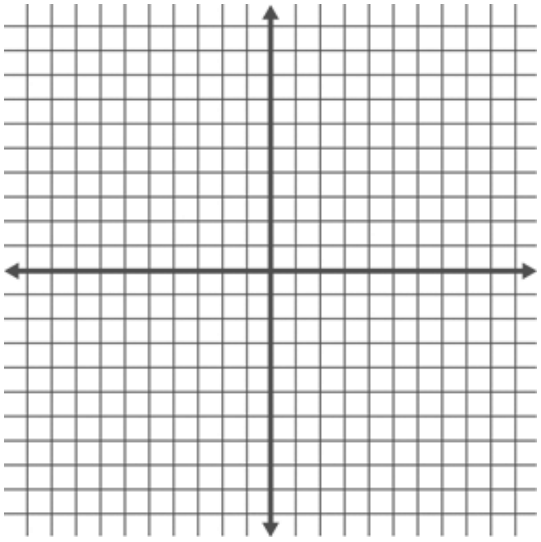
    b. $f(z + 1)$

    c. $f(3b - 1)$

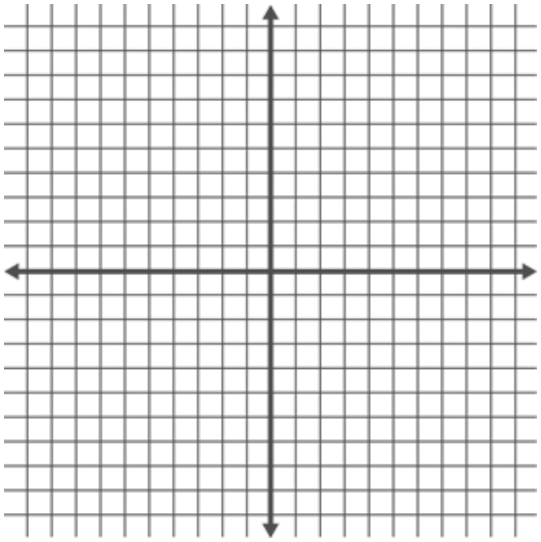
    d. $f(-b + 2)$

10. Graph the function and determine if it is one to one using the horizontal line test

a. $f(x) = \sqrt{x + 5}$



b. $g(x) = -x^2 + 1$



11. Find the inverse of the function $f(x) = 3x - 4$

12. Find the inverse of the function $g(x) = \frac{1}{2}x + 5$

13. Are these two functions inverses of each other?

a. $f(x) = \frac{x}{4}$

$g(x) = 4x$

b. $g(x) = \frac{x + 7}{5}$

$h(x) = 5x + 7$