

Sections 2.1, 2.4

1. The functions  $v$  and  $w$  are defined by the following tables

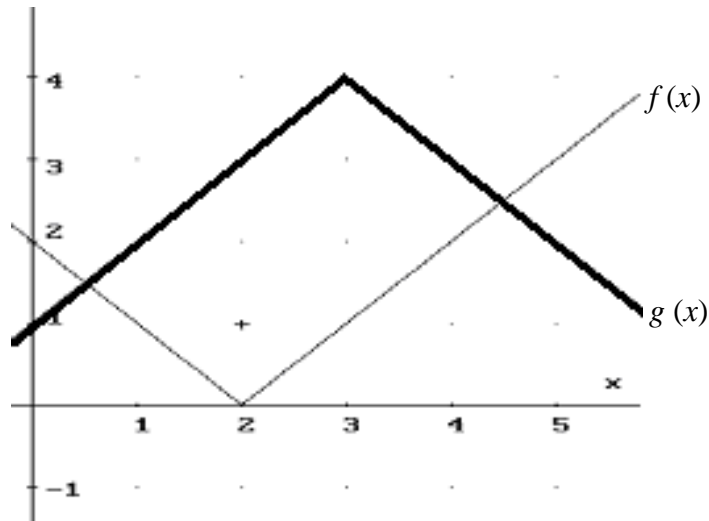
$x$	-3	-2	0	1	4	5	8	10	12
$v(x)$	12	6	3	2	5	8	11	15	20

$x$	0	2	3	4	5	8	9	11	15
$w(x)$	1	3	5	10	4	2	0	-2	-5

Determine the values for each of the following.

- a.  $v^{-1}(8) =$  \_\_\_\_\_      b.  $v(12) - 5 =$  \_\_\_\_\_  
 c.  $v(w(4)) =$  \_\_\_\_\_      d.  $v(8) - w(8) =$  \_\_\_\_\_  
 e.  $w(v(5)) =$  \_\_\_\_\_      f.  $w^{-1}(5) =$  \_\_\_\_\_

2. Consider the graph of  $f(x)$  and  $g(x)$  shown below.



Determine the values for each of the following.

- a.  $2f(5) =$  \_\_\_\_\_      b.  $g(1) - 9 =$  \_\_\_\_\_  
 c.  $f(g(3)) =$  \_\_\_\_\_      d.  $f(2) - g(2) =$  \_\_\_\_\_  
 e.  $g(g(1)) =$  \_\_\_\_\_      f.  $f(g(5)) =$  \_\_\_\_\_

3. Let  $f(x) = x^3$  and  $g(x) = x^{-3}$

a. Determine  $f(g(x))$

b. Determine  $g(f(x))$

c. Are  $f(x)$  and  $g(x)$  inverses of each other? Why or why not?

4. Let  $p(x) = x^2 + 2x + 3$  and  $r(x) = 5 - x$ . Determine each of the following. Simplify.

a.  $-p(x) =$

b.  $p(-x) =$

c.  $p(r(x)) =$

d.  $r(p(x)) =$

e.  $r(p(-1)) =$

f.  $r^{-1}(x) =$