Smith's Algebra 2 Name: _____

Date: _____ Period:_____

Worksheet: Function Combinations & Inverses (Sections 8.1-8.2)

For problems #1-2, use the functions f and g to find each combination. Show all work.

1. f(x) = x+1 g(x) = $\sqrt{x}$

a. (f+g)(4)

b. (f/g)(9)

c. (f ∘ g)(9)

d. (g ∘ f)(9)

2. f(x) = 2x g(x) = 3x – 4

a. (f-g)(x)

b. (fg)(x)

c. (f ∘ g)(x)

d. (g ∘ f)(x)

For problems #3-4, find the domain of each function, and then also the domain of the given combination. State domains as discussed, for example {x: x>3} or {x: x≠-2} or {x: x is a real #}. Be careful to remember that there are only two basic ways to 'break a function machine'.

3. f(x) = x+3

g(x) = x – 4

(f/g)(x)

4. f(x) = $\sqrt{x}$

g(x) = x – 2

(f ∘ g)(x)

5. A store is having a clearance sale, where a certain shirt is marked down by $10, and then another 25% is taken off the final price. The two functions that represent these discounts from a price x are as follows: f(x) = x – 10 and g(x) = 0.25x
Which one of the following is the correct combination of the functions f and g that represents the clearance price of an item during this sale? (Circle one answer.)

a. (f+g)(x)
b. (fg)(x)
c. (f ∘ g)(x)
d. (g ∘ f)(x)

For problems #6-7, verify algebraically that f and g are inverse functions of each other. Show all work.

6. $f(x) = 2x - 1$

$g(x) = \frac{1}{2}(x + 1)$

7. $f(x) = 3 - x$

$g(x) = 3 - x$

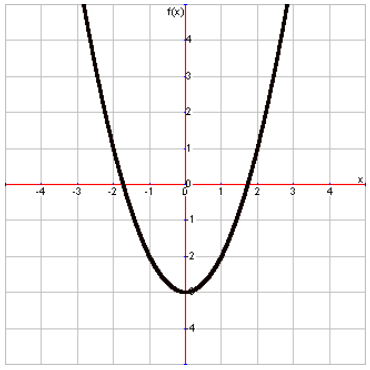
For problems #8-9, find the inverse function. Show all work.

8. $f(x) = 6x + 1$

9. $f(x) = \frac{3x}{x - 5}$

10. Does the given graph show a function? Explain your answer.

Does the given graph have an inverse? Explain your answer.



11. Use the given graph of f to sketch the graph of f^{-1}.