Name_____

Precalculus Unit 1: 1.5 Homework
Combinations of Functions

For problems 1-2 find $(f+g)(x)$, $(f-g)(x)$, $(f \cdot g)(x)$, and $\left(\frac{f}{g}\right)(x)$ for the given functions.

1. $f(x) = x^2,\ \ g(x) = 1 - x$

   a. $(f+g)(x) =$

   b. $(f-g)(x) =$

   c. $(f \cdot g)(x) =$

   d. $\left(\frac{f}{g}\right)(x) =$

2. $f(x) = \frac{x}{x+1},\ g(x) = x^3$

   a. $(f+g)(x) =$

   b. $(f-g)(x) =$

   c. $(f \cdot g)(x) =$

   d. $\left(\frac{f}{g}\right)(x) =$

For problems 3-5 use the functions f and g, given by $f(x) = x^2 - 1$ and $g(x) = x - 2$ to evaluate the given values.

3. $(f-g)(0) =$

4. $(f \cdot g)(-6) =$

5. $\left(\frac{f}{g}\right)(0) =$

For problems 6-7, use the functions given for f and g to find $(f \circ g)(x)$, $(g \circ f)(x)$, and $(f \circ g)(0)$.

6. $f(x) = x^2; g(x) = x - 1$

   a. $(f \circ g)(x) =$

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

   c. $(f \circ g)(0) =$

7. $f(x) = \sqrt[3]{x-1}; g(x) = x^3 + 1$

   a. $(f \circ g)(x) =$

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

   c. $(f \circ g)(0) =$

For problems 8-9, find the indicated domains.

8. $f(x) = \sqrt{x+4}; \quad g(x) = x^2$

   a. Domain of f:

   b. Domain of g:

   c. Domain of $f \circ g$:

9. $f(x) = \frac{1}{x}; \quad g(x) = x + 3$

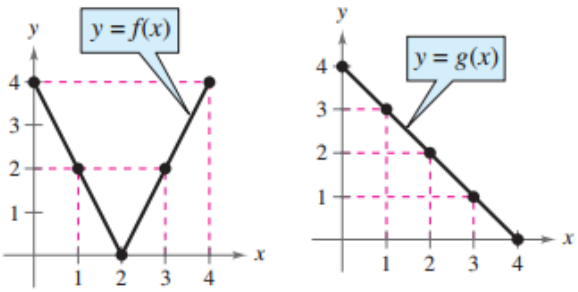
   a. Domain of f:

   b. Domain of g:

   c. Domain of $f \circ g$:

For problem 10, use the graphs provided to find the indicated values.

10.



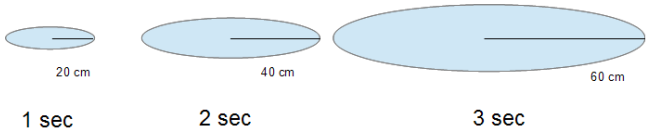
   a. $(f + g)(3) =$

   b. $\left(\frac{f}{g}\right)(2) =$

   c. $(f \circ g)(2) =$

   d. $(g \circ f)(2) =$

11. A stone is tossed into a pond and creates a ripple with a radius that increases at a rate of 20 cm/sec.



   a. Express the radius of the ripple as a function of *t* where *t* is time in seconds.

   b. Express the area of the ripple as a function of *r* where *r* is the radius in centimeters.

   c. Express the area of the ripple as a function of *t* where *t* is time in seconds.