

Honors Pre-Calculus Chapter 1.5.-1.8 Worksheet

Do work on your own paper.

1. Identify the transformations applied to  $f(x)$ .

a)  $f(x+3)-7$

b)  $-3f(x)+2$

c)  $-\frac{1}{2}f(-x+4)-6$

2. Find  $f \circ g$  and  $g \circ f$  and their domains.

a)  $f(x) = 2x - 8$ ,  $g(x) = \frac{x}{x+6}$

b)  $f(x) = \sqrt{x-7}$ ,  $g(x) = x^2 + 7$

3. Use the graphs on p. 169 of your book to evaluate the following.

a)  $(f+g)(1)$

b)  $\left(\frac{g}{f}\right)(3)$

c)  $(f \circ g)(4)$

d)  $(f \circ f)3$

4. Find function  $f$  and  $g$  such that  $(f \circ g)(x) = h(x)$

a)  $h(x) = \frac{5x+15}{x+5}$

b)  $h(x) = (\sqrt[3]{4x-5})^5$

c)  $h(x) = \frac{x^2-4}{x+1}$

5. Given  $f(x) = 2x + 1$  and  $g(x) = x - 3$ , find the following.

a)  $(f \circ g)^{-1}$

b)  $(g^{-1} \circ f^{-1})$

c)  $(f^{-1} \circ f^{-1})$

6. Determine if the following are 1 to 1 functions, if it is find its inverse. If it isn't create a domain restriction that will make it a 1 to 1 function and find the inverse of the new function.

a)  $f(x) = \frac{2x - 7}{5x + 1}$

b)  $f(x) = -(x - 2)^2 + 1$

c)  $f(x) = \sqrt{x + 5} - 1$

7. Suzy found that the demand for her self-serve frozen yogurt varies inversely as the price of the yogurt. She sells 1,200 oz/day when the price is 33¢/oz. Write a model that relates the demand and cost. What would the demand be if she raised her price to 35¢/oz?

8. The illumination from a light source varies inversely as the square of the distance from the light source. When the distance from the light source is tripled, how does the illumination change?

9. Write a function (including any domain restrictions) for the vertical distance,  $d$ , from  $f(x) = 2\sqrt{x}$  down to

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