

Name: _____

Date: _____

2.6 Combinations of Transformations**BLM 2-9**

1. For each function $g(x)$, and the base function $f(x)$, identify the values of a , k , d , and c .

a) $g(x) = 3f(x - 1) - 2$ for $f(x) = x^2$

b) $g(x) = \frac{2}{3}f(2x - 6) + 5$ for $f(x) = \sqrt{x}$

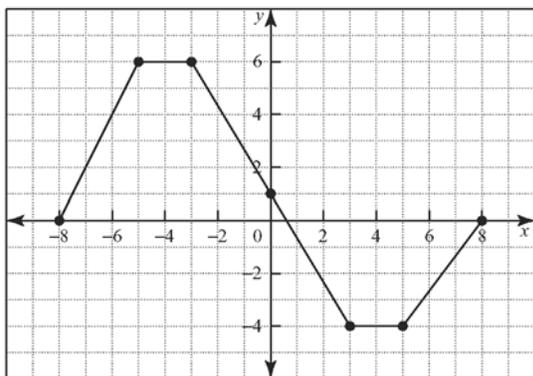
c) $g(x) = -2f(3x + 9) - 2$ for $f(x) = x$

d) $g(x) = 4f(2x - 1) + 1$ for $f(x) = \frac{1}{x}$

2. Identify the order in which the transformations must be applied to the base function to obtain the functions $g(x)$ in question 1.

3. Graph each base function and transformed function from question 1 on the same set of axes. Graph the transformed function using the order established in question 2.

4. For the graph of $f(x)$ given, sketch the graph of $g(x)$ after the given transformation.



a) $g(x) = 2f(x) - 2$

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

5. Often, a series of transformations can be reduced to fewer transformations by simplifying the function using algebra. For the given functions, list the transformations as they are given in $f(x)$, and then simplify algebraically to reduce the number of transformations needed to properly describe the function.

a) for $g(x) = x^2$, $f(x) = 2g[2(x + 1)] + 1$

b) for $g(x) = \sqrt{x}$, $f(x) = \frac{1}{3}g(9x) + 4$

6. Sketch the original and simplified functions in question 5 to verify your solutions.

