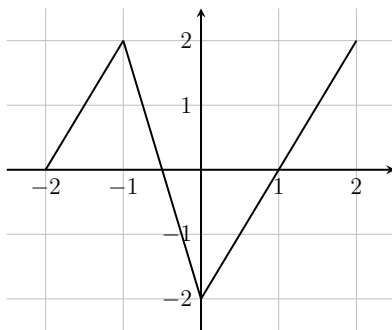
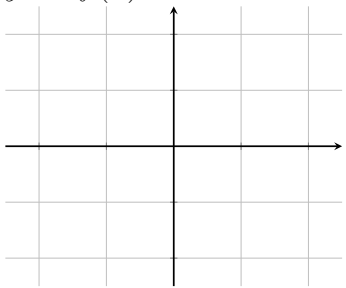


Purpose: In this problem set, you will practice building new functions by transformations of old functions and identifying the parent function of a transformed function.

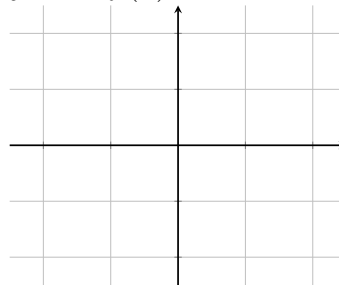
1. The graph of the function $f(x)$ is given on the coordinate axes below. For each transformation of f below, draw the transformed graph. Make sure to set the scales on the axes in your solutions.



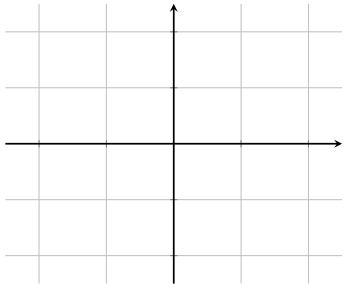
(a) $y = 2f(x)$



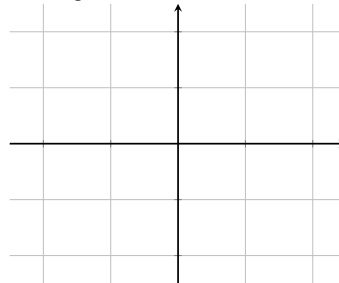
(d) $y = -2f(x)$



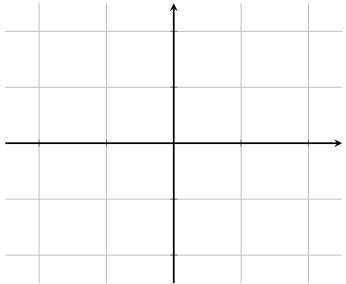
(b) $y = -f(x - 1)$



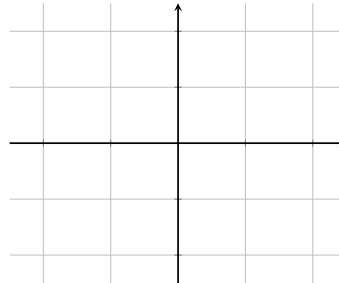
(e) $y = \frac{1}{3}f(x)$



(c) $y = f(-x)$



(f) $y = f(x) + 2$



2. Fill in all of the blanks in the table below for which you have sufficient information. If you do not have sufficient information, write N .

x	-3	-2	-1	0	1	2	3
$f(x)$	3	-1	-4	-6	0	-3	32
$f(-x)$							
$-f(x)$							
$f(x) - 2$							
$f(x - 2)$							
$f(x) + 2$							
$2f(x)$							
$-1/3f(x)$							

3. Describe the transformations required to transform the function f into the function g . Remember that order matters! Check your work by starting with the formula for f and performing each transformation at a time to see if you get to the formula for g .

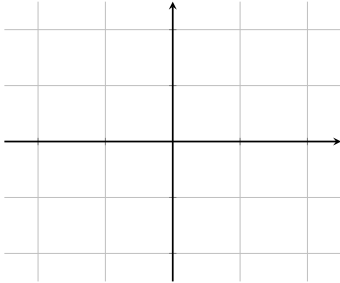
(a) $f(x) = \sqrt{x}$, $g(x) = -3\sqrt{x} - 1$

(b) $f(x) = x^3$, $g(x) = (2x + 4)^3$

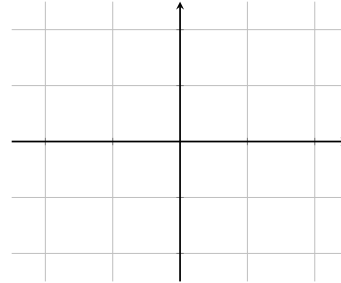
-
4. Find a partner and pick a toolkit function. For each sequence of function transformations below, perform the transformation your toolkit function algebraically and graphically.

Toolkit Function: $f(x) =$

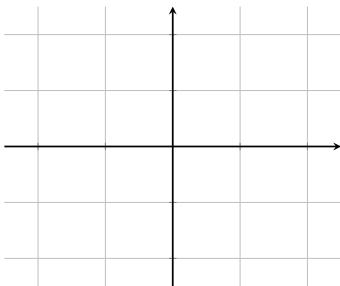
- (a) Compress horizontally by a factor of 2
Shift left 3 units



- (c) Compress horizontally by a factor of $\frac{1}{2}$
Shift left 3 units



- (b) Stretch horizontally by a factor of 2
Shift up 3 units
Shift right 1 unit



- (d) Compress vertically by a factor of 3
Reflect across the x -axis
Translate right 2 units

