

**MAC 1140**  
**LA session**

*Week 2*

1. List the transformations, in correct order, that are needed to graph  $f(x) = -2(x-3)^2 + 5$  starting with the graph of  $y = x^2$ .

2. The graph of a function  $f(x) = \sqrt{x}$  is transformed using the sequence of transformations given below (in the given order). Write the equation for the function obtained after each transformation is performed. Write the equation for the final graph.

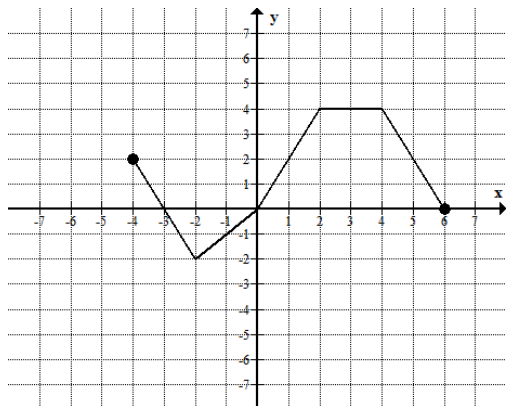
- a) shift to the left by 2
- b) reflect about the y-axis
- c) stretch vertically by a factor of 3
- d) shift down by 4

3. Graph using transformations following functions. Start with the graph of a basic function. Plot accurately at least 3 points on the graph of the basic function and use them to perform transformations. Do one transformation at a time. Write the formulas for each intermediate graph. (use graph paper!)

a)  $f(x) = 1 - \frac{2}{x+4}$

b)  $g(x) = \frac{1}{2}\sqrt{-x+3} + 1$

4. The graph of a function  $f(x)$  is given below. Use transformations to graph  $y = -f(2x - 4)$ . List the transformations needed and graph each intermediate graph.



5. Given  $f(x) = \frac{3x-2}{2x+4}$  and  $g(x) = \frac{2x+1}{x-1}$ . Find and simplify  $(f \circ g)(x)$ . Find the domain of  $(f \circ g)(x)$

6. Find two functions (none identity),  $f$  and  $g$ , such that  $h(x) = (f \circ g)(x)$ , where  $h(x) = \sqrt[6]{2x-7}$

7. Suppose  $f(2) = 3$ ,  $f(-3) = 9$ ,  $g(-3) = 2$ ,  $g(9) = 5$ . Find  $(f \circ g)(-3)$