REVIEW FOR EXAM II

The video on Page 37 of your online text will be helpful on this review, especially for Problem 6. You will need to write your answers on a separate sheet of paper. There is not room on this sheet for your answers.

1. Suppose that the function h is defined by the output formula $u = h(m) = \dfrac{4m+1}{5}$.

   (a) What is the domain for the function h?

   (b) Construct the output formula for the function h^{-1}. Use proper function notation in your answer.

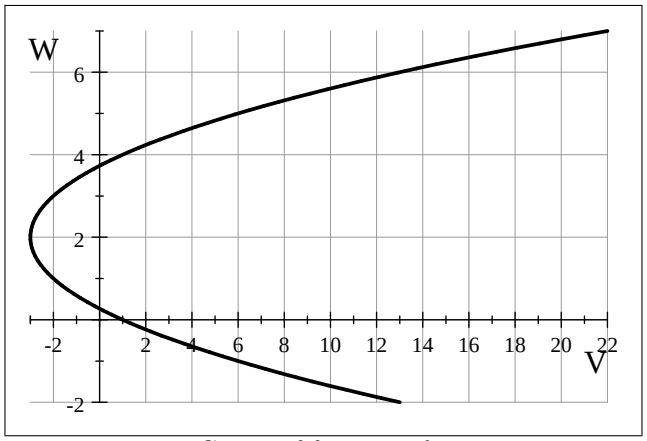
   (c) Suppose the function g is defined by the output formula $b = g(u) = \dfrac{1}{u}$. Construct the output formulas for $g \circ h$ and for $h^{-1} \circ g$. Simplify your formulas as much as possible.

2. Suppose the function g is defined by the output formula $y = g(x) = \dfrac{2x}{4+x}$.

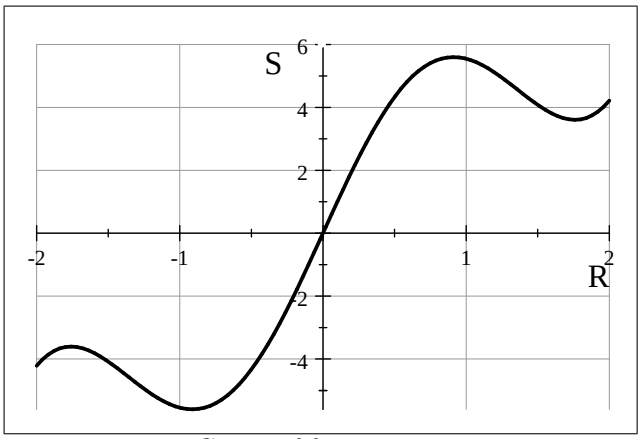
   (a) If f is defined by the output formula $t = f(w) = \sqrt{w}$, then construct the output formulas for $f \circ g$ and $g \circ f$. Simplify your formulas as much as possible.

   (b) Construct the output formula for the function g^{-1}.

3. The graphs below define *functions* f and g.



Graph of function f



Graph of function g

   (a) What is the input variable for the function f? How do you know?

   (b) What is the input variable for the function g? How do you know?

   (c) If possible, use the graph to evaluate $f(f(3))$. If it is not possible, explain why.

   (d) If possible, use the graph to evaluate $f(g(2))$.

   (e) Use the graph to find all solutions to the equation $4 = g(x)$.

4. The tables below provide information about the output for two functions f and g.

Input Value	Output from f
2	5
4	4
5	8
10	6

Input Value	Output from g
0	10
5	6
10	3
8	0

(a) What is the value of $f(f(2))$?

(b) What is the value of $g^{-1}(f(10))$?

(c) What is the value of $f^{-1}(g^{-1}(6))$?

5. Let g be any function that gives the values of y in terms of the values of x.

(a) Use proper function notation to write the formula that gives the average rate of change for y as x goes from $x = -3$ to $x = 1$.

(b) Suppose now that g is the function in Problem 2. Compute the average rate of change for y as x goes from $x = -3$ to $x = 1$.

6. The diagram below shows the graph of a function f that gives the values of A in terms of the values of B. On the grid provided, sketch the graph of f^{-1}. Be sure to label your axes.