MAKEUP OPPORTUNITY FOR MATH 195 MIDTERM 1

You have the chance to make up your lost points on questions #7 and #8. Do the following, and submit it to me on the Monday after spring break (3/16). If you turn in full correct solution (with allowance for a minor mistake) I will change the grade book for exam 1 to give you full points for questions #7 and #8. Because you have ample time to think through this and check your work, I will not give any points back for partial or incorrect solutions.

You are welcome to use a graphing calculator to check your work, but what you submit must be a self-contained explanation.

(1) Consider the function $f(x) = \sqrt{-x-3} + 2$.
   (a) Sketch a graph of $f(x)$ and its inverse $f^{-1}(x)$, labeling each graph.
   (b) State the domain and range of both f and f^{-1}.
   (c) Find a formula for $f^{-1}(x)$. *Be sure to correctly state the domain restruction, which you should know from the previous step.*

(2) Consider the function $g(x) = -\sqrt[3]{2x-6} - 2$.
   (a) Sketch a graph of $g(x)$ and its inverse $g^{-1}(x)$, labeling each graph.
   (b) State the domain and range of both g and g^{-1}.
   (c) Find a formula for $g^{-1}(x)$.

(3) As if you were teaching a classmate, write a short paragraph explaining how given the graph of a function $h(x)$ you can determine the graph of its inverse $h^{-1}(x)$.

(4) As if you were teaching a classmate, write a short paragraph explaining the connection between the domain and range of a function $h(x)$ and the domain and range of its inverse $h^{-1}(x)$.

(5) As if you were teaching a classmate, write a short paragraph explaining the process or algorithm to, given a formula for a function $h(x)$, find a formula for its inverse $h^{-1}(x)$.