Name _____

Homework 13
Sections 3.5 & 3.6

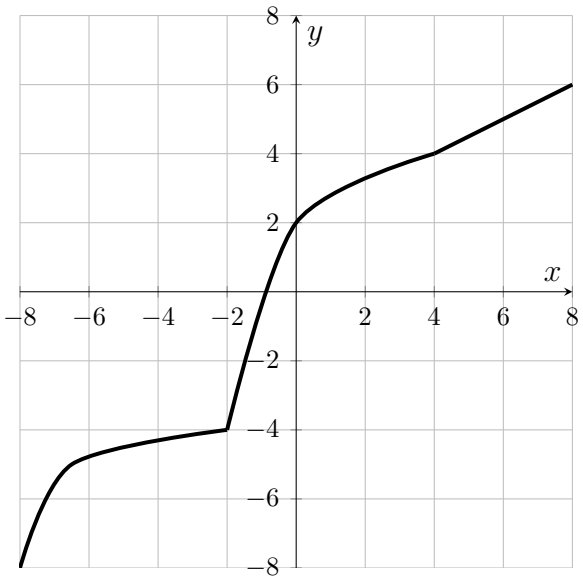
1. (2ea) Consider the functions $f(x) = x^2 + 3x$, $g(x) = 4x - 1$, and $h(x) = 5\sqrt{x-3}$.

   (a) Determine and simplify $(g \circ f)(x)$

   (b) Determine and simplify $(fg)(x)$

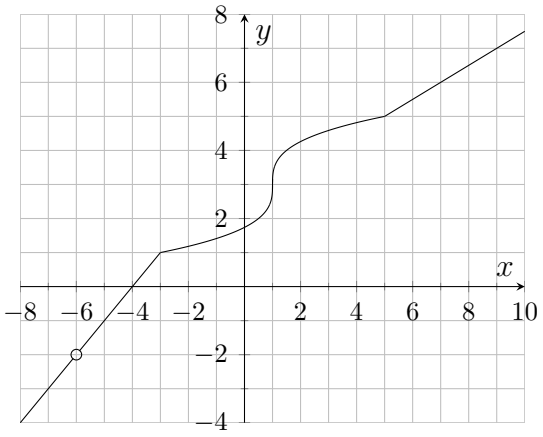
   (c) Determine and simplify $((f+g) \circ h)(7)$

2. (2) Let $f(x)$ be the function graphed below. Sketch the graph of $f^{-1}(x)$ on the same set of axes.



3. (4) Given the one-to-one function $f(x) = \dfrac{x^3 - 6}{x^3 + 2}$, find $f^{-1}(x)$.

4. (1ea) Given the functions $g(x)$ and $h(x)$ shown below, compute each of the quantities.



This is the graph of $y = g(x)$

x	-3	-1	0	1	4	5
$h(x)$	2	5	6	0	1	-3

a) $g^{-1}(-3)$

b) $h^{-1}(0)$

c) $h^{-1}\left(g(-3)\right)$

d) $g^{-1}\left(h^{-1}(6)\right)$

e) $g\left(g^{-1}(1)\right)$

f) $g^{-1}\left(g(3)\right)$

g) $h\left(h^{-1}\left(h(-3)\right)\right)$

h) $g\left(g^{-1}(-2)\right)$