Name _____

Homework 15
Section 4.3

1. (3) *Algebraically* determine whether the functions $f(x) = \dfrac{4}{2-x}$ and $g(x) = 4 - \dfrac{2}{x}$ are inverses.

2. (3) Sketch the graph of each of the following and use it to determine whether the function is one-to-one.

   (a) $f(x) = -\frac{3}{x}$ (b) $g(x) = x^3 - 2x - 4$ (c) $h(x) = 5(x+9)^{1/4}$

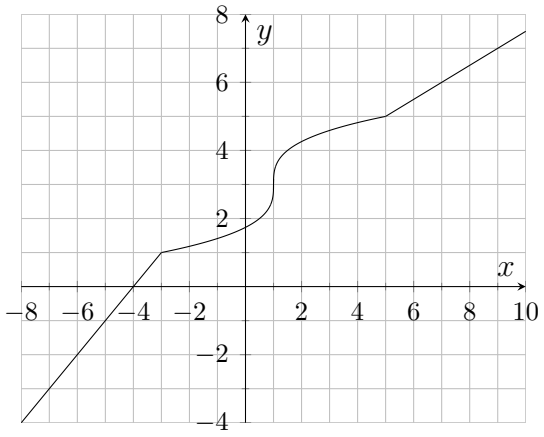
3. (2ea) Suppose the function $C = f(q)$ gives the cost (in dollars) of producing q sprockets.

   (a) Explain the practical meaning (in terms of dollars and sprockets) of the expression $f(150) = 250$.

   (b) Explain the practical meaning (in terms of dollars and sprockets) of the expression $f^{-1}(500) = 350$.

4. (3) Given the one-to-one function $f(x) = \dfrac{x^3 + 4}{x^3 - 5}$, find $f^{-1}(x)$.

5. (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
$h(x)$	2	5	6	0	1

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