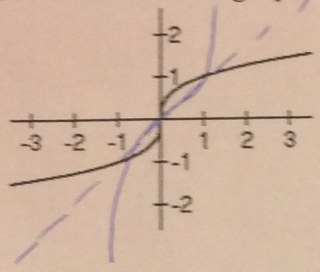
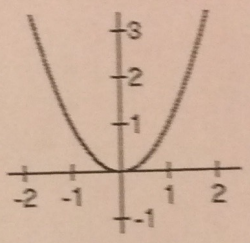
HW 6-4 Inverses
Secondary III

Name: Selected Answers
Date: _____ Class: _____

Determine whether the following functions are one-to-one. If so, sketch a graph of the inverse on the same graph.

1. 

yes

2. 

Find $f^{-1}(x)$ for each of the following and ~~state the domain of $f^{-1}(x)$ including any inherited restrictions from f(x).~~

3. $f(x)=3x-6$

$x = 3y-6$
$+6 \quad +6$
$\frac{x+6}{3} = \frac{3y}{3}$
$\frac{x+6}{3} = y$

$f^{-1}(x) = \frac{x+6}{3}$

4. $f(x)=\frac{2x-3}{x+1}$

5. $f(x)=\sqrt{x-3}$

$x^2 = \sqrt{y-3}^2$
$x^2 = y-3$
$+3 \quad +3$
$x^2+3 = y$

$f^{-1}(x) = x^2+3$

6. $f(x)=x^3$

7. $f(x)=\sqrt[3]{x+5}$

8. $f(x)=\frac{x+3}{3x-4}$

$(3y-4)x = \frac{y+3}{(3y-4)}(3y-4)$

$3xy-4x = y+3$
$-y+4x \quad -y+4x$
$3xy-y = 4x+3$
$\frac{y(3x-1)}{(3x-1)} = \frac{4x+3}{(3x-1)}$

$f^{-1}(x) = \frac{(4x+3)}{(3x-1)}$

9. Which function is the inverse of $f(x)=3x-2$?

a. $f^{-1}(x)=\frac{x-3}{2}$ b. $f^{-1}(x)=2-3x$ c. $f^{-1}(x)=\frac{x+2}{3}$ d. $f^{-1}(x)=\frac{x-2}{3}$

10. Which function is the inverse of $f(x)=x^3+1$

a. $f^{-1}(x)=\sqrt[3]{x-1}$ b. $f^{-1}(x)=\sqrt[3]{x}-1$ c. $f^{-1}(x)=\sqrt[3]{x+1}$ d. $f^{-1}(x)=1-x^3$

$x = y^3 + 1$
$-1 \quad -1$

$\sqrt[3]{x-1} = \sqrt[3]{y^3}$

$\sqrt[3]{x-1} = y = f^{-1}(x)$

Review

Solve the following radical equations

1. $2\sqrt[3]{3x+2}=\sqrt[3]{4x-9}$

2. $7+\sqrt{x+4}=2$

3. Suppose one painter can paint the entire house in twelve hours, and the second painter takes eight hours. How long would it take the two painters together to paint the house?