Math 12
Vogler
Worksheet 5

1.) Use the horizontal line test to determine whether $f(x) = x^3$ is one-to-one. Note: Since the function is one-to-one, then it has an inverse.

For the Problems 2-4, show that the function is one-to-one by using the definition (i.e. using Algebra).

2.) $g(x) = \frac{1}{x} + 3$ 3.) $g(x) = \sqrt{2x + 1}$ 4.) $f(t) = \frac{t+4}{2t-7}$

5.) For the following function f, show that $f(f(x)) = x$ (i.e. f is its own inverse).

$$f(x) = \frac{(3x - 2)}{(5x - 3)}$$

6.) Verify that the given pair of functions are inverse functions of each other

$$f(x) = 4x - 1; \quad g(x) = \frac{1}{4}x + \frac{1}{4}$$

7.) Let $f(x) = 2x + 1$.
    a.) Find $f^{-1}(x)$.
    b.) Calculate $f^{-1}(5)$ and $1/f(5)$.