

Name: SOLUTIONS

Quiz #1 - January 12, 2007

1. Define what it means for a function to be *one-to-one*.

$$f(x) = f(y) \text{ implies } x = y.$$

2. Let

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

- a. Find the domain of  $f(x)$ .  
b. Find a formula for  $f^{-1}(x)$ .

$$a. \left\{ x \neq -\frac{3}{2} \right\} \text{ (or } (-\infty, -\frac{3}{2}) \cup (-\frac{3}{2}, \infty)$$

$$b. y = \frac{4x-1}{2x+3}$$

$$2xy + 3y = 4x - 1$$

$$2xy - 4x = -1 - 3y$$

$$x(2y-4) = -1-3y$$

$$x = \frac{-1-3y}{2y-4}$$

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

3. If  $h(x) = x + \sqrt{x}$ , find  $h^{-1}(6)$ .

$$6 = x + \sqrt{x}$$

$$x = 4$$

$$h^{-1}(6) = 4$$