

## UNGRADED HOMEWORK FOR LECTURE 2

M 408C, UNIVERSITY OF TEXAS AT AUSTIN

- (1) Stewart §1.6: 21-26, 39-41, 75. Hint for 22: the inverse is also a function of the form  $\frac{ax+b}{cx+d}$ .
- (2) (Spivak) Consider  $f(x) = 1/(1+x)$ . For what values of  $c$  does the equation  $f(cx) = f(x)$  have a solution for  $x$ ? For what values of  $c$  does this equation have two different solutions for  $x$ ?
- (3) (after Spivak) Suppose the function  $g(x)$  satisfies  $g(g(x)) = g(x)$ . What is

$$g(g(g(g(\dots g(g(x)) \dots))))$$

where the function has been composed with itself  $n \geq 1$  times? Can you find a function with this property? Can you find one that is not constant? Can you find one whose range is equal to the set of integers? Can you find one so that  $g(0) = 1$  and  $g(1) = 0$ ?