

## MthT 430 Projects Chapter 3 Functions

In class September 19, 2007

### The oneover Function

The oneover (reciprocal) function will be the function defined by

$$F(x) = \frac{1}{x}.$$

1. What is the domain of  $F$ ?
2. For what values of  $x$  is  $(F \circ F)(x) = x$ ?
3. Construct an extension  $G$  of  $F$  such that  $(G \circ G)(x) = x$  for **all**  $x \in \mathbf{R}$ .
4. Construct some slight modifications  $H_1, \dots$  of  $F$  such that  $(H_i \circ H_i)(x) = x$  for **all**  $x \in \mathbf{R}$ .
5. Think of some continuous functions  $C(x)$  such that  $(C \circ C)(x) = x$  for **all**  $x \in \mathbf{R}$ .

**Problems from Spivak** – Turn in September 26, 2007 as Problem Set 04.

1. Chapter 3, Problems 4 and 5
2. Chapter 3, Problem 10

### Descriptions of Graphs

Draw the graph of a (not too complicated) function  $f$ . Write down a description (complete sentences) of the graph including information about intervals of continuity, monotonicity, and concavity and the values of  $f(x)$  at not more than four points. Pass the *description only* to your neighbor to draw the graph. Compare your neighbor's graph with your own and discuss.

Repeat!

### Group Version

As a group, draw the graph of a (not too complicated) function  $f$ . Write down a description (complete sentences) of the graph including information about intervals of continuity, monotonicity, and concavity and the values of  $f(x)$  at not more than four points. Pass the *description only* to another group to draw the graph. Compare the other group's graph with your own and discuss.

Repeat!