

## Homework 2 (Due Tues, Feb 4)

Math 2710 – Spring 2014

Professor Hohn

1. (pg. 20 #75) The definition of the limit of a function,  $\lim_{x \rightarrow a} f(x) = L$ , can be expressed using quantifiers as

$$\forall \epsilon > 0 \quad \exists \delta > 0 \quad \forall x, (0 < |x - a| < \delta \implies |f(x) - L| < \epsilon).$$

Use quantifiers to express the negation of this statement, which would be a definition of  $\lim_{x \rightarrow a} f(x) \neq L$ .

2. (pg. 50 #10) If  $ac \mid bc$  and  $c \neq 0$ , prove that  $a \mid b$ .
3. (pg. 50 #99, revised) Prove that if  $a \mid b$ , then  $a^2 \mid b^2$ .