Homework 2, Math 310, due September 17

- (1) Writing truth tables, decide whether the two statements are equivalent or not. A, B, C will denote some mathematical statements.
 - (a) $A \wedge (B \vee C)$ and $(A \wedge B) \vee (A \wedge C)$.
 - (b) A and $\neg \neg A$.
 - (c) $A \Rightarrow B$ and $\neg A \lor B$.
 - (d) $A \Rightarrow B$ and $A \land B$.
- (2) If A, B are subsets of \mathbb{R} , describe using any of our notations for sets, $A \cap B, A \cup B$ in the following. Choose the simplest (somewhat vague requirement) expression, if possible.
 - (a) $A = \{x | 0 \le x \le 10\}$ and $B = \{x | -5 \le x \le 5\}$.
 - (b) $A = \{x | x^2 < 1\}$ and $B = \{x | x(x-1) < 0\}$.
 - (c) $A = \{x | x \text{ is an integral multiple of } \pi\}$ and $B = \{x | (\sin x = 0) \land (\cos x = 1)\}.$