Illinois Institute of Technology
Department of Computer Science

CS 330 Discrete Structures

Fall Semester, 2010

Quiz 2

Sept. 24th, 2010

1. Show that these three statements are equivalent, where a and b are real numbers:
   (a) a is less than b;
   (b) the average of a and b is greawter than a; and
   (c) the average of a and b is less than b.
2. Use forward reasoning to show that if x is a nonzero real number, then $x^2 + 1/x^2 \geq 2$. [Hint: Start with the inequality $(x - 1/x)^2 \geq 0$ which holds for all nonzero reawl numbers x.]
3. If A, B, C, and D are sets, does it follow that $(A \oplus B) \oplus (C \oplus D) = (A \oplus C) \oplus (B \oplus D)$?