Loyola University Chicago
Math 201, Section 001, Fall 2009

Quiz 1

Name (print): _____ **Signature:** _____

You have 30 minutes. Show your work. Notes not allowed! Problems are on both sides of this sheet.

Problem 1. (8 pts) Use truth tables to show the following:

P AND (Q OR R) is equivalent to (P AND Q) OR (P AND R)

Problem 2. (6 pts) Consider the following statement:

$$\textit{If } x \geq 0 \textit{ and } y \geq 0 \textit{ then } xy \geq 0.$$

Do the following:

a. Write the contrapositive statement and determine whether it is true or not.

b. Write the converse statement and determine whether it is true or not.

Problem 3. (6 pts) Prove or disprove the following statement:

$$x \in \left\{ y \in \mathbb{R} \,|\, y^2 - 3y \leq 0 \right\} \implies 0 \leq x \leq 5.$$