MAT 129
Lab #3
February 26, 2007

(1) Prove or disprove that $(x \vee y) \Rightarrow z$ is logically equivalent to $(x \Rightarrow z) \vee (y \Rightarrow z)$.
(2) How many five-digit numbers are there that do not have two consecutive digits the same? *Note:* The first digit may not be zero.
(3) A bookshelf contains 20 books. In how many different orders can these books be arranged on the shelf?
(4) A class contains ten boys and ten girls. In how many different ways can they stand in line if they must alternate in gender (-ie. no two boys and no two girls are allowed to stand next to each other)?
(5) Prove that $(x \wedge y) \vee (x \wedge \neg y)$ is logically equivalent to x.