CECS 228 Name:

Lab 3.2 ID: Date:  
Objective:

* Be able to prove set identities
* Be able to understand Cartesian products
* Be able to recognize partition of a set

Exercise 1: Let A, B, and C be sets. Show that A ∪ (B ∩ C) = (C ∪ B) ∩ A.

Exercise 2: Let A, B, and C be sets. Show that ∪ (A ∩ B) = ∪ B.

Exercise 3: Use set builder notation and logical equivalences to establish the first De Morgan law = ∪ ∪ .

Exercise 4:  
Let A = {a, b, c}, B = {x, y}, and C = {0, 1}. Find  
a) A × B.

b) C × B × A.

Exercise 5:  
Which of these collections of subsets are partitions of the set of integers? If not, explain why.  
a) the set of even integers and the set of odd integers

b) the set of positive integers and the set of negative integers

c) the set of integers divisible by 3, the set of integers leaving a remainder of 1 when divided by 3, and the set of integers leaving a remainder of 2 when divided by 3

d) the set of integers less than −100, the set of integers with absolute value not exceeding 100, and the set of integers greater than 100

e) the set of integers not divisible by 3, the set of even integers, and the set of integers that leave a remainder of 3 when divided by 6