John Robertson CS 355 Homework 1

1:

A = {2, 4, 6}

B = {4, 5, 6}

A ∪ B = {2, 4, 5, 6}

**(A ∪ B)C = {1, 3}**

AC = {1, 3, 5}

BC = {1, 2, 3}

**AC ∩ BC = {1, 3}**

A ∩ B = {4, 6}

**(A ∩ B)C = {1, 2, 3, 5}**

**AC ∪ BC = {1, 2, 3, 5}**

2:

Using the above sets A and B as examples:

(a)

(AC ∩ B) = {5}

(AC ∩ BC) = {1, 3}

**(AC ∩ B) ∪ (AC ∩ BC) = {1, 3, 5}**

(A ∩ BC) = {2}

(AC ∩ BC) = {1, 3}

**(A ∩ BC) ∪ (AC ∩ BC) = {1, 2, 3}**

(b)

(A ∩ B)C = {1, 2, 3, 5}

(AC ∩ B) = {5}

(AC ∩ BC) = {1, 3}

(A ∩ BC) = {2}

**(AC ∩ B) ∪ (AC ∩ BC) ∪ (A ∩ BC) = {1, 2, 3, 5}**

(c)

A = {1, 3, 5}

B = {1, 2, 3}

A ∩ B = {1, 3}

**(A ∩ B)C = {2, 4, 5, 6}**

AC = {2, 4, 6}

BC = {4, 5, 6}

(A ∩ BC) = {5}

(AC ∩ B) = {2}

(AC ∩ BC) = {4, 6}

**(AC ∩ B) ∪ (AC ∩ BC) ∪ (A ∩ BC) = {2, 4, 5, 6}**

3:

4: