

# ANSWER KEY

Math 106  
March 3, 2009

Below are answers to problems 71-78 on page 88. The answers are NOT in order, and you will note that there are more answers than there are problems, because in several instances there were multiple ways to specify the sets in question. Match each set description below with the shaded area in one of the Venn diagrams in problems 71-78.

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74 a)  $A' \cap B$  By Regions:  
 $(3, 4) \cap (2, 3) = 3$

72 b)  $(A \cup B)'$   $(1, 2, 3)' = 4$

71 c)  $(A \cap B)' \cup (B \cap A')$   $[(1, 2) \cap (1, 4)] \cup [(2, 3) \cap (3, 4)] = (1 \cup 3)$

73 d)  $B \cup A'$   $(2, 3) \cup (3, 4) = (2, 3, 4)$

71 e)  $(A \cap B)' \cap (A \cup B)$   $(2)' \cap (1, 2, 3) = (1, 3, 4) \cap (1, 2, 3) = (1, 3)$

72 f)  $A' \cap B'$   $(3, 4) \cap (1, 4) = 4$

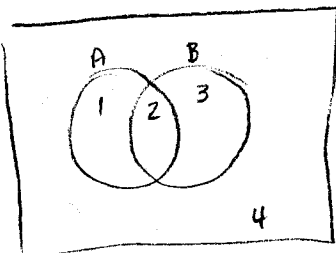
78 g)  $(A \cup B)' \cap C$   $(A \cup B) = (1, 2, 4, 5) \cup (2, 3, 5, 6) = (1, 2, 3, 4, 5, 6)$   
 $(A \cup B)' = (7, 8)$   $(A \cup B)' \cap C = (7, 8) \cap (4, 5, 6, 7) = 7$

75 h)  $C \cup (A \cap B)$   $C \cup (2, 5) = (4, 5, 6, 7) \cup (2, 5) = (2, 4, 5, 6, 7)$

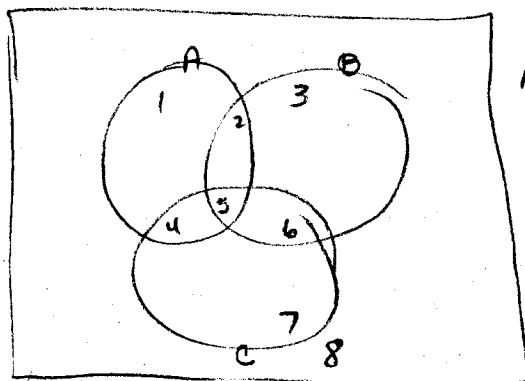
76 i)  $A \cap (B \cup C)$   $A \cap (B \cup C) = A \cap [(2, 3, 5, 6) \cup (4, 5, 6, 7)] = A \cap (2, 3, 4, 5, 6, 7) = (2, 4, 5)$

77 j)  $(B \cup C) \cap A'$   $(2, 3, 4, 5, 6, 7) \cap (3, 6, 7, 8) = (3, 6, 7)$

76 k)  $(A \cap B) \cup (A \cap C)$   $(2, 5) \cup (4, 5) = (2, 4, 5)$



$A = (1, 2)$   
 $B = (2, 3)$



$A = (1, 2, 4, 5)$   
 $B = (2, 3, 5, 6)$   
 $C = (4, 5, 6, 7)$