Math 102   Name _____

Section 2.3: Set Operations

1. Assume A = {1, 3, 5, 7}, B = {2, 3, 5, 7, 8} and C = {1, 2, 3, 7} are subsets of the universal set
    U = {1, 2, 3, 4, 5, 6, 7, 8, 9}. Determine each of the following sets.
    Use good notation and circle your answers.

   (a) $A \cup B$

   (b) $A \cap B$

   (c) $A \cap C$

   (d) $A - B$

   (e) $A' \cup B'$

   (f) $A' \cap (B \cup C)$

   (g) $(A \cap B) \cup (A \cap C)$
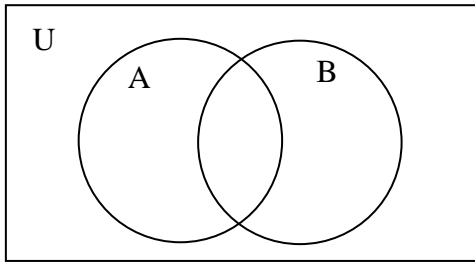
   (h) $A' \cap B'$

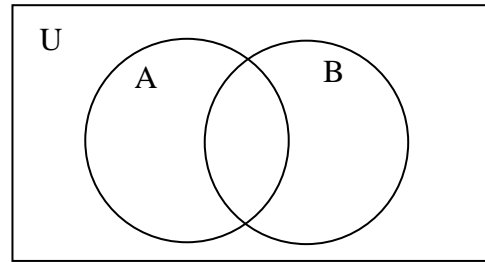   (i) $(A \cup B)'$

   (j) $(A - C) \cup (B - C)$

   (i) Show that in this problem, $n(A \cup B) = n(A) + n(B) - n(A \cap B)$.

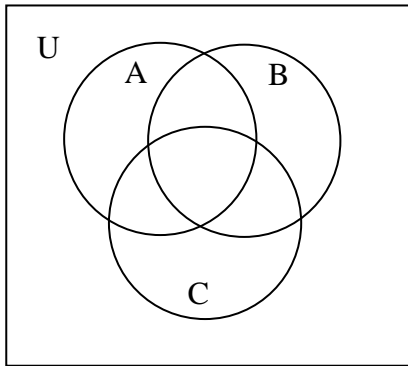2. In each Venn Diagram below, shade the region associated with the given set.
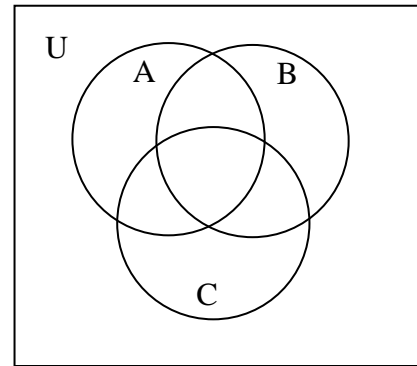
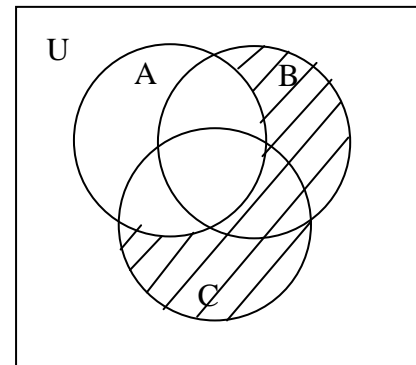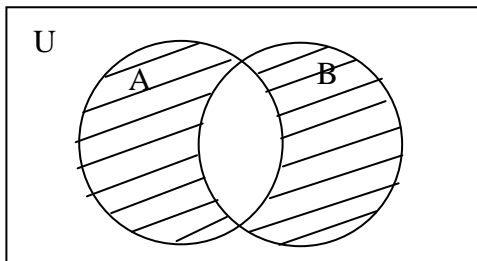a) $(A \cup B')$

b) $(B \cap A)'$

c) $A \cap (B \cup C')$

d) $(B \cap A) \cup (C - A)$

3. In each, name the shaded region using the letters A, B, C, and the set operations.

4. The **number of elements** is written in each region of the following Venn diagram. Find the following:

a. $n(A \cup B)$

b. $n(C')$

c. $n(U)$

d. $n((A \cup C) - (B \cup C))$

e. $n((A \cap C) - B)$