

Answers to HW # 2 (Chapter 2)

2.6 $E = A^c$, $F = C - D = C \cap D^c$, $G = B - C = B \cap C^c$,
 $H = A^c - B = A^c \cap B^c = (A \cup B)^c$, $I = B^c$. ■

2.8 (i) $B_0 = A_1^c \cap A_2^c \cap A_3^c$.

(ii) $B_1 = (A_1 \cap A_2^c \cap A_3^c) \cup (A_1^c \cap A_2 \cap A_3^c) \cup (A_1^c \cap A_2^c \cap A_3)$.

(iii) $B_2 = (A_1 \cap A_2 \cap A_3^c) \cup (A_1 \cap A_2^c \cap A_3) \cup (A_1^c \cap A_2 \cap A_3)$.

(iv) $B_3 = A_1 \cap A_2 \cap A_3$.

(v) $C = B_0 \cup B_1 \cup B_2$.

(vi) $D = B_1 \cup B_2 \cup B_3 = A_1 \cup A_2 \cup A_3$. ■

2.9 If $A \cup B \cup C = A$, then $B \cup C \subseteq A$, which also implies that $B \subseteq A$ and $C \subseteq A$. If $A \cap B \cap C = A$, then $A \subseteq B \cap C$, which also implies that $A \subseteq B$ and $A \subseteq C$. ■