Week-2_Exercises

1. Let the set operator, $\sim$, be defined so that

$$A \sim B = (A \cap B) \cup (\overline{A} \cap \overline{B})$$

Determine by Veitch diagram whether :

(a) $A \sim B = (\overline{A} \cup B) \cap (A \cup \overline{B})$

(b) $\overline{A \sim B} = \overline{A} \sim B$

(c) $\overline{A \sim B} = \overline{(A \cap B) \sim (A \cup B)}$

(d) $(A \sim B) \sim C = A \sim (B \sim C)$

(e) $A \cup (B \sim C) = (A \cup B) \sim (A \cup C)$

(f) $A \cap \overline{(B \sim C)} = \overline{(A \cap B) \sim (A \cap C)}$

2. In a survey about the following of football games, it was found that 44% followed Gaelic, 40% followed Soccer and 24% followed Rugby. Also,
12% followed both Rugby and Gaelic,
6% followed both Rugby and Soccer,
8% followed both Gaelic and Soccer
and 6% followed all three football games

(a) What percentage followed none of these football games

(b) What percentage followed just Gaelic.