1 Set membership and subsets

Of these nine sets,

i) which are subsets of $S_1$?

ii) which are members of $S_9$?

iii) which are subsets of $S_9$?

iv) which are members of $S_4$?

v) which are subsets of $S_4$?

(Example: “which are members of $S_1$?” — $S_2$, $S_3$ and $S_7$)

2 Operations on sets

Let $A = \{a, b, c\}$, $B = \{c, d\}$, $C = \{d, e, f\}$. What are the following sets?

i) $A \cup B$

ii) $A \cap B$

iii) $A \cup (B \cap C)$

iv) $C \cup A$

v) $B \cup \emptyset$

vi) $A \cap (B \cap C)$

3 Optional problem: The cardinality of the power set

For any set $A$, we have $|\wp(A)| = 2^{|A|}$. Prove this (≈ explain in rigorous terms why this holds).