# Set Theory Operation Identities

*from Rosen's (7e) Table 2.1 (pg 130)*

| ***Identity*** | ***Name*** |
|---|---|
| $A \cap U = A$<br>$A \cup \emptyset = A$ | Identity Laws |
| $A \cup U = U$<br>$A \cap \emptyset = \emptyset$ | Domination Laws |
| $A \cup A = A$<br>$A \cap A = A$ | Idempotent Laws |
| $\overline{(\overline{A})} = A$ | Complementation Law |
| $A \cup B = B \cup A$<br>$A \cap B = B \cap A$ | Commutative Laws |
| $A \cup (B \cup C) = (A \cup B) \cup C$<br>$A \cap (B \cap C) = (A \cap B) \cap C$ | Associative Laws |
| $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$<br>$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ | Distributive Laws |
| $\overline{A \cap B} = \overline{A} \cup \overline{B}$<br>$\overline{A \cup B} = \overline{A} \cap \overline{B}$ | De Morgan's Laws |
| $A \cup (A \cap B) = A$<br>$A \cap (A \cup B) = A$ | Absorption Laws |
| $A \cup \overline{A} = U$<br>$A \cap \overline{A} = \emptyset$ | Complement Laws |