$$\overline{\overline{\overline{\overline{\overline{A}A}A}A}A} = \overline{\overline{\overline{\overline{0}A}A}A} = \overline{\overline{\overline{A}A}A} = \overline{\overline{0}A} = \overline{A} \tag{1}$$

$$\begin{gathered}(A+\overline{B}).(\overline{A.C}).(\overline{A.\overline{C}}) = (A+\overline{B}).\overline{A.C + A.\overline{C}} = \\ (A+\overline{B}).\overline{A.(C+\overline{C})} = \overline{A}.(A+\overline{B}) = 0 + \overline{A}.\overline{B} = \overline{A+B}\end{gathered} \tag{2}$$

$$\begin{gathered}(A \to W).(B \to S) + (\overline{A} \to S).(\overline{B} \to W) = \\ (\overline{A} + W).(\overline{B} + S) + (A + S).(B + W) = \\ W.(\overline{B} + S + A + S) + \overline{A}.(\overline{B} + S) + B.(A + S) = \\ W.S + W.(A + \overline{B}) + S.(\overline{A} + B) + A.B + \overline{A}.\overline{B} = \\ = (***)(A \equiv B) + W.S + W.(A.\overline{B}) + S.(\overline{A}.B)\end{gathered} \tag{3}$$

$$\begin{gathered}A \to B \to A \to B \to A = \\ \overline{A} + B \to A \to B \to A = \\ \overline{\overline{A} + B} + A \to B \to A = \\ A\overline{B} + A \to B \to A = \\ A \to B \to A = \\ \overline{A} + B \to A = \\ \overline{\overline{A} + B} + A = \\ A\overline{B} + A = A\end{gathered} \tag{4}$$

$$\begin{gathered}\overline{AB \to C} \to B + \overline{AC} = AB\overline{C} \to B + \overline{A} + \overline{C} = \\ \overline{AB\overline{C}} + B + \overline{A} + \overline{C} = \overline{A} + \overline{B} + C + B + \overline{A} + \overline{C} = 1\end{gathered} \tag{5}$$

$$\begin{gathered}(***)\overline{AC \leftarrow B \to \overline{A} + \overline{C}} = \\ \overline{(B \to AC).(B \to \overline{A} + \overline{C})} = \\ \overline{(B \to AC).(B \to \overline{AC})} = \\ \overline{(\overline{B} + AC).(\overline{B} + \overline{AC})} = \\ \overline{(\overline{B} + AC.\overline{AC})} = B\end{gathered} \tag{6}$$