Sum of Products Expressions

When implementing expression using switches, it is helpful to have the expression in a form where only inputs are complemented. For each expression below, use DeMorgan's theorem to obtain an equivalent expression which contains ANDs and ORs of the inputs (e.g., A) and their complements (e.g., $\overline{A}$). There should be **no complements (bars)** in the final expression except those over the inputs.

Part A $\quad Out_1 = \overline{\overline{AB} + CD}$

$Out_1 =$

Part B $\quad Out_2 = \overline{A\,\overline{(B+C)}\,D}$

$Out_2 =$

Part C $\quad Out_3 = \overline{(A+B)}\,C + \overline{(D+\overline{E})\,F}$

$Out_3 =$

Part D $\quad Out_4 = A\,\overline{(B\,C)} + \overline{(D+E)}$

$Out_4 =$

Part E $\quad Out_5 = \overline{(A + B + \overline{C + D})} + (\overline{E\,F} + \overline{G})$

$Out_5 =$

Part F $\quad Out_6 = \overline{\overline{\overline{\overline{\overline{A}\,B}\,C}\,D}\,E}$

$Out_6 =$