Incomplete Circuits

Several incomplete circuits are shown below. Complete each circuit by adding the needed devices so the output is high or low for all combinations of inputs (i.e., no floats or shorts). If the circuit contains NFETs, use only PFETs. If the circuit contains PFETS, use only NFETs. Also, for each circuit, write a boolean expression for when the output is high.

\[ \text{Out}_1 = \quad \text{Out}_2 = \quad \text{Out}_3 = \]

\[ \text{Out}_1 = \quad \text{Out}_2 = \quad \text{Out}_3 = \]

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