Name: _____

Pid: _____

1. (10 points) Write the truth table of the proposition $\neg(p \wedge q) \vee (r \wedge \neg p)$.

2. (10 points) Write the symbolic expression of $(p \land q) \lor (\neg q \land r)$ in words using

   p: You play football.

   q: You miss the midterm exam.

   r: You pass the course.

3. (10 points) Check if the formulas $P = p \wedge (\neg q \vee r)$ and $Q = p \vee (q \wedge \neg r)$ are equivalent, using truth tables.

4. (20 points) Show that $\left. \begin{array}{c} p \to (r \vee q) \\ \neg r \to \neg q \end{array} \right\} \implies p \to r.$