

CSci 1302 Assignment 4
Due Wedn., Feb. 15th in class

Problem 1 (8 points). Prove the following using deductive proofs (not truth tables).

$$1. \quad \begin{array}{l} p \wedge \sim r \quad (\text{use a proof by contradiction}) \\ q \rightarrow r \end{array}$$

$$\hline \therefore \sim(p \rightarrow q)$$

$$2. \quad \begin{array}{l} (p \vee q) \leftrightarrow r \end{array}$$

$$\hline \therefore (p \rightarrow r) \wedge (q \rightarrow r)$$

Problem 2 (2 points). Exercises 10, 12 p. 55.

Problem 3 (4 points). Exercises 15, 17 p. 55.

Problem 4 (8 points). Exercises 21, 25 p. 55. Simplify the resulting boolean formulas (if possible) to construct smaller circuits. Show the resulting circuits.

Problem 5 (6 points). Exercises 27, 29 p. 56.