Math 109 Homework 2 October 5, 2018

Name: _____

Pid: _____

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

2. (10 points) Let us consider four-lines geometry, it is a theory with undefined terms: point, line, is on, and axioms:

   1. there exist exactly four lines,
   2. any two distinct lines have exactly one point on both of them, and
   3. each point is on exactly two lines.

   Show that every line has exactly three points on it.

3. (10 points) In Euclidean (standard) geometry, prove: If two lines share a common perpendicular, then the lines are parallel.