Math-42 Sections 01, 02, 05

Homework #1

Due: Week of 3/3

Reading

Section 1.1

Problem

1. Let p, q, and r be propositions and consider the compound proposition:

   $$p \to p \wedge \neg q \leftrightarrow q \vee r$$

   Construct a truth table for this 3-variable proposition. Be sure to show each intermediary result and then the final result. Be wary of operator precedence!

2. Consider the following propositions:

   $p \coloneqq \sqrt{2}$ is a rational number.
   $q \coloneqq 0$ is an even number.
   $r \coloneqq x^2 = 1 \to x = 1$

   Using your truth table from the first problem, indicate whether the compound proposition is true or false. Be sure to clearly indicate the row that gives you the proper answer.