

Math 373 Exam 1 Review

- Truth tables.
- Logical terms: negation, contrapositive, converse.
- Logically equivalent forms of statements.

Problems 1 & 2 page 53 of Eccles plus #1-13 in the notes.

1. The negation of $p \Rightarrow q$ is logically equivalent to

$$(1) (\text{NOT } p) \Rightarrow (\text{NOT } q) \quad (2) (\text{NOT } q) \Rightarrow (\text{NOT } p) \quad (3) p \text{ AND } (\text{NOT } q) \\ (4) q \text{ OR } (\text{NOT } p) \quad (5) p \text{ OR } (\text{NOT } q) \quad (6) (\text{NOT } q) \Rightarrow p$$

2. $p \text{ OR } q$ is logically equivalent to

$$(1) (\text{NOT } p) \Rightarrow (\text{NOT } q) \quad (2) (\text{NOT } q) \Rightarrow (\text{NOT } p) \quad (3) p \text{ AND } (\text{NOT } q) \\ (4) q \text{ OR } (\text{NOT } p) \quad (5) p \text{ OR } (\text{NOT } q) \quad (6) (\text{NOT } q) \Rightarrow p$$

- Proofs involving rational and irrational numbers.

Exercises 2, 5, 6, 7 on rationals and irrationals in Notes for Days 3, 4 & 5.

- Proofs using the field axioms.

Problems 6, 8(i) pp53-54 of Eccles AND 2acd, 3a, 4, 5 in the Notes for Days 3, 4 & 5.

- Proofs using the 4 order axioms.

8(ii) p54 of Eccles plus 10a, 11abc, 13, 17, 20a in Notes for Days 3, 4 & 5.

- Mathematical induction.

12, 13, 14, 23 Eccles pp54-55 and Ex 19 part 2 in Induction notes.