

MATH 1300-D WEEK 3

SECTIONS 3.2–3; PAGES 95–112

ABSTRACT. A court ruling read in part “...based on the evidence presented to the court it can not be ruled out that the defendant is not innocent” Was the defendant guilty? Truth tables help us analyze complicated logical statements.

SECTION 3.2

Reading. Make sure that you understand:

- (1) The negation of a statement including the truth table of $\sim p$.
- (2) The truth tables of the compound statements “ p and q ” and “ p or q ”.
- (3) De Morgan’s laws for negation of conjunctions (“and” statements) and disjunctions (“or” statements).
- (4) Logical equivalence of statements.

Self-assessment. To verify that you have understood the material, solve the following problems at the end of the section: 1–12, 22, and 32.

Now take Quiz-04; you need to score 75% on this quiz before you can start working Homework-04, which is due on Thursday 10 September.

SECTION 3.3

Reading. Make sure that you understand:

- (1) The truth tables of the compound statements
“if p then q ” and “ p if and only if q ”.
- (2) The converse, the inverse, and the contrapositive of a conditional statement.
- (3) The distinction between necessary and sufficient conditions.

Self-assessment. To verify that you have understood the material, solve the following problems at the end of the section: 14, 18, 22, and 46.

Now take Quiz-05; you need to score 75% on this quiz before you can start working Homework-05, which is due on Monday 14 September.

USING LOGIC TO SEARCH THE INTERNET

Internet search engines make heavy use of logic, and you can use logic to make your searches more precise. Compare the results you get from these Google searches:

- ‘‘Lars Winther Christensen’’ OR ‘‘Contemporary Mathematics’’
- ‘‘Lars Winther Christensen’’ ‘‘Contemporary Mathematics’’
- ‘‘Lars Winther Christensen’’ –‘‘Contemporary Mathematics’’

The “–” in the last search means “not”, and the space between the two terms in the second search is interpreted by the search engine as a logical “and”.

You can learn more at <https://support.google.com/websearch/answer/2466433>.

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