

L^AT_EX for Peter

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Freshman Fall

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1 Logic

1.1 Propositions and Logical Operations

Proposition: a statement that is either true or false

Some examples include: "It is raining today", " $3 \cdot 8 = 20$ ".

However, not all statements are propositions: "open the door"

| Name | Symbol | alternate name |
|------|----------|----------------|
| NOT | \neg | negation |
| AND | \wedge | conjunction |
| OR | \vee | dijunction |
| XOR | \oplus | exclusive or |

1.2 Evaluating Compound Propositions

1.3 Conditional Statements

1.4 Logical Equivalence

1.5 Laws of Propositional Logic

1.6 Predicates and Quantifiers

1.7 Quantified Statements

1.8 DeMorgan's law for Quantified Statements

1.9 Nested Quantifiers

1.10 More Nested Quantifiers

1.11 Logical Reasoning

1.12 Rules of Inference with Propositions

1.13 Rules of Interence with Quantifiers