

FINAL Study Guide

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Discrete Final

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Contents

1 The Foundations: Logic and Proofs

1.1 Propositional Logic

Examples of a proposition:

$p(x) = x$ is a cat. $q(x) = x$ has fur.

1. Negation, $\neg p(x)$, changing the statement to x is not a cat
2. Conjunction, $p(x) \wedge q(x)$, changing the statement to say x is a cat and it has fur.
3. Disjunction, $p(x) \vee q(x)$, changing the statement to say x is a cat and it does not have fur.
4. Exclusive Or, $p(x) \oplus q(x)$, where the statement is true only when exactly one of $p(x)$ or $q(x)$ is true, otherwise the statement is false.
5. Conditional Statement

1.2 Trigonometry Derivatives

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1.3 Inverse Trigonometry Derivatives