

# MACM 101 Chapter 1.3 - Logical Identities

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This document covers Rosen 1.3, Pearce 1.1 72-xx.

## Summary

1. Tautologies, Contradictions and Contingencies
2. Logical Equivalence
  - Important Logical Equivalences
  - Showing Logical Equivalences
3. Logical Implication (not in Rosen)
4. Normal Forms
  - Distributive Normal Form (DNF)
  - Conjunctive Normal Form (CNF)

# 1 Tautologies, Contradictions and Contingencies

A Tautology (**T**) is a proposition that is always true.

Example:  $p \vee \neg p$

A Contradiction (**F**) is a proposition that is always false.

Example:  $p \wedge \neg p$