CMSC 250
Discrete Structures

Methods of Proofs

Proof by Contraposition

- If $3n + 2$ is odd, where n is an integer, then n is odd.
- If n^2 is even, where n is an integer, then n is even.
- If $n = ab$, where a and b are positive integers, then $a \leq \sqrt{n}$ or $b \leq \sqrt{n}$

Proof by Contradiction

- At least four of any 22 days must fall on the same day of the week.
- $\sqrt{2}$ is irrational.

Proofs of Equivalence

- If n is an integer, then n is odd if and only if n^2 is odd.
- The following statements about the integer n are equivalent
  - n is even.
  - n - 1 is odd.
  - n^2 is even