

Week 1 List of Theorems

De Morgan's Laws (DML)

Let A and B be statements. Then

$$\neg(A \vee B) \equiv \neg A \wedge \neg B \quad \text{and} \quad \neg(A \wedge B) \equiv \neg A \vee \neg B$$

Bounds by Divisibility (BBD)

Let $a, b \in \mathbb{Z}$. If $a \mid b$ and $b \neq 0$, then $|a| \leq |b|$.

Transitivity of Divisibility (TD)

Let $a, b, c \in \mathbb{Z}$. If $a \mid b$ and $b \mid c$, then $a \mid c$.

Divisibility of Integer Combinations (DIC)

Let $a, b, c \in \mathbb{Z}$. If $a \mid b$ and $a \mid c$, then for all $x, y \in \mathbb{Z}$, $a \mid (bx + cy)$.