

# Homework Template

Your Name

MAT 203 - Discrete Mathematics

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**Theorem x.yz.** Delete this text and write theorem statement here.

*Proof.* Blah, blah, blah. Here is an example of the `align` environment:

$$\begin{aligned}\sum_{i=1}^{k+1} i &= \left( \sum_{i=1}^k i \right) + (k+1) \\ &= \frac{k(k+1)}{2} + k+1 && \text{(by inductive hypothesis)} \\ &= \frac{k(k+1) + 2(k+1)}{2} \\ &= \frac{(k+1)(k+2)}{2} \\ &= \frac{(k+1)((k+1)+1)}{2}.\end{aligned}$$

□

**Proposition x.yz.** Let  $n \in \mathbb{Z}$ .

*Disproof.* Blah, blah, blah. I'm so smart.

□

**Summations.** Working with summation notation

Inline:  $\sum_{n=1}^{\infty} 2^{-n}$

Display style:

$$\sum_{n=1}^{\infty} 2^{-n}$$

**Set Operations and Relations.** How to write set notation

$\emptyset, \mathbb{N}, \mathbb{Z}, \mathbb{W}$

$A \cap B$

$A \cup B$

$\neg A$

$\bar{A}$

$\overline{A}$

$\sim A$

$\overline{A \cup B}$

$$\overline{A \cup B}$$

$A - B, A \setminus B$

$A \subset B, A \subseteq B$

$A \supset B, A \supseteq B$

$a \in A, a \notin A$

$A = B, A \neq B$

$A \times B$

$A = \{1, 2, 3, 4, 5\}, B = \{(x, y) | x < 1 \wedge y \geq -2\}, C = \{3, 6, 9, \dots, 6000\}$

$n! = n(n-1)(n-2) \cdots 3 \cdot 2 \cdot 1$

**Logic Symbols and Operators.** Using formal logic symbols

$$p \wedge q, p \vee q$$

$$\sim p, \neg p$$

$$p \Rightarrow q, p \rightarrow q$$

$$p \Leftrightarrow q, p \leftrightarrow q$$

$$\forall, \exists$$

$$\therefore$$

**Number Theory and Miscellaneous.** Assorted symbols

$$a \equiv b \pmod{c}$$

Greek letters:  $\alpha$ ,  $\Omega$ ,  $\delta$ ,  $\Delta$ , etc.