$\forall$: for all

$\nexists$: there not exist

$\exists$: there exist

$\nexists$: not for all

$\in$: in

$\lightning$, $\not\equiv$, $\Rightarrow\Leftarrow$, C.T.D : contradiction

$\subset$: subset

$\blacksquare$, Q.E.D, E.T.S : 증명끝

$\Rightarrow$: then (법칙)

WLOG : Without Loss Of Generality

$\rightarrow$: if then (조건)

iff : if and only if

L.H.S : Left Hand Side

R.H.S : Right Hand Side

$\mathbb{N}$: 자연수

$\mathbb{C}$: 복소수

$\mathbb{Z}^+$: 양의 정수

$\mathbb{Z}$: 정수

$\mathbb{R} \setminus \mathbb{Q}$: 무리수

$\mathbb{Z}^-$: 음의 정수

$\mathbb{Q}$: 유리수

$\mathbb{P}$: 소수

$\mathbb{Z}^{\oplus}$: 음이 아닌 정수

$\mathbb{R}$: 실수

$\mathbb{C} \setminus \mathbb{R}$: 허수

$\mathbb{Z}^{\ominus}$: 양이 아닌 정수

$\mathbb{Z}_p := \{ x \in \mathbb{Z}^{\oplus} \mid x < p \}$

$\mathbb{Z}_p^{\times} := \{ x \in \mathbb{Z}^+ \mid x < p \wedge gcd(x, p) = 1 \}$

operator $mod\langle a, b \rangle := r \in \mathbb{Z}_b$ s.t. $\exists_q$ s.t. $a = bq + r$

p.H.p : pigeon Hole principle (비둘기집 원리)

M.I. : Mathematical Induction (수학적 귀납법)

B.C : By Contrast (귀류법)

Trivial : 자명하다

Group

$\langle G, \cdot \rangle$ is group if

(G: set, $\cdot$: binary operator)

0. $\forall a, b \in G \Rightarrow a \cdot b \in G$: Closed under $\cdot$ (= Closed on $\cdot$)
1. $\forall a, b, c \in G \Rightarrow (a \cdot b) \cdot c = a \cdot (b \cdot c)$: Associativity
2. $\exists e \in G$ s.t. $\forall a \in G \Rightarrow a \cdot e = e \cdot a = a$: Identity
3. $\forall a \in G \Rightarrow \exists a^{-1} \in G$ s.t. $a \cdot a^{-1} = a^{-1} \cdot a = e$: Inverse

Field

$\langle F, +, \cdot \rangle$ is field if

0. $\forall a, b \in F \Rightarrow a + b \in F \wedge a \cdot b \in F$
1. $\forall a, b \in F \Rightarrow a + b = b + a \wedge a \cdot b = b \cdot a$
2. $\forall a, b, c \in F \Rightarrow (a + b) + c = a + (b + c) \wedge (a \cdot b) \cdot c = a \cdot (b \cdot c)$
3. $\exists 0 \in F$ s.t. $\forall a \in F \Rightarrow a + 0 = a$ (0: $+$ 에서의 항등원을 의미하는 기호)
4. $\exists 1 \in F$ s.t. $\forall a \in F \Rightarrow a \cdot 1 = a$ (1: $\cdot$ 에서의 항등원을 의미하는 기호)
5. $\forall a \in F \Rightarrow \exists -a \in F$ s.t. $a + (-a) = 0$
6. $\forall a \in F \setminus \{0\} \Rightarrow \exists a^{-1} \in F$ s.t. $a \cdot a^{-1} = 1$
7. $\forall a, b, c \in F \Rightarrow a \cdot (b + c) = a \cdot b + a \cdot c$