Predicates and Quantified Statements

Universal	∀x ∈ D, P(x)	∃x∈ D, ~P(x)
Existential	∃(x,y)∈ D,x≠y|P(x,y)	∀(x,y)∈ D,x≠y|~P(x,y)
Universal Conditional	∀x, P(x)→Q(x)	∃x∈ D|P(x)∧~Q(x)

~existential = universal
~universal = existential

More Formal Statements

Formal Contrapositive	∀x ∈ D, ~Q(x)→~P(x)
Formal Converse	Q(x)→P(x) ∀x ∈ D
Formal Inverse	∀x ∈ D, ~P(x)→~Q(x)

MQ Invalid Arguments

Quantified Converse	∀x, P(x)→Q(x)
	Q(j) for a particular j
	∴P(j)
Quantified Inverse Error	∀x, P(x)→Q(x)
	~P(j) for a particular j
	∴~Q(j)

Multiple Quantifiers

Existential MQ	∃x ∈ D|∀y ∈ E, P(x, y)	
Neg. MQ	∀x ∈ D, ∃y ∈ E | P(x, y) [original]	∃x ∈ D, ∀y ∈ E | ~P(x, y) [negation]
Universal Modes Pones		∀x ∈ Z, P(x)→Q(x)
		P(k), for a particular k ∈ Z
		∴ ~Q(k)
Universal Modus Tones		∀x ∈ D, P(x)→Q(x)
		~Q(j), j ∈ D
		∴ ~P(j)