

Section 1.4: Negation of Quantifiers and Venn Diagrams

Examples: Negate each quantifier.

All dogs are friendly.

Negation:

Some students were late:

Negation:

No computers were on sale:

Negation:

Some monkeys are not smart.

Negation:

All teachers are rich.

Negation:

Some mammals do not have tails:

Negation:

No celebrity is happy.

Negation:

Venn Diagrams for Quantifiers

A Venn diagram is a picture that shows relationships between quantifiers and their properties to prove arguments valid or invalid.

Examples: Draw a Venn diagram for each.

All dogs are mammals.

Some five-year-olds can read.

No dogs are cats.

Venn Diagrams for valid arguments

Examples: Prove using a Venn diagram if the argument is valid or invalid.

All math majors are smart.

John is a math major.

Therefore, John is smart.

Some basketball players are over 7 feet tall.

Bob is a basketball player.

Therefore, Bob is over 7 feet tall.

All teachers are smart.

All smart people are rich.

Therefore, all teachers are rich.

All rich people are happy.

All celebrities are rich.

Therefore, all celebrities are happy.