Math 150

Section 3.5 Analyzing Arguments with Euler Diagrams

A logical argument is made up of premises (assumptions, laws, rules, widely held ideas, or observations) and a conclusion.

An argument is valid if the fact that all the premises are true forces the conclusion to be true. An argument that is invalid (not valid) is called a fallacy.

Euler diagrams are visual techniques used to check the validity of a logical argument.

Example 1 Determine whether the following argument is valid or invalid.

All Math 150 students love math.
You are a Math 150 student.
You love math!

Example 2 Determine the validity of the following argument.

Some Math 150 students love math.
You are a Math 150 student.
You love math!

Example 3 Is the following argument a fallacy?

All chickens have beaks.
All birds have beaks.
All chickens are birds.