Examples of Valid Arguments

#22: Use symbol to write the logical form of the following argument then use a truth table to determine its validity

If Tom is not on team A, then Huai is on team B
If Huai is not on team B then Tom is on team A
∴ Tom is not on team A or Huai is not on team B

Which of the following arguments are valid? Using symbols write the logical form. If valid identify the rule of inference; otherwise state whether the converse or inverse error was made

#29
- If at least one of these two numbers is divisible by 6 then their product is divisible by 6
- Neither of the two numbers is divisible by 6
- ∴ The product of the two numbers is not divisible by 6.

#30
- If this computer program is correct then it produces the correct output when run with the test data my teacher gave me.
- The computer program produces the correct output when run with the test data my teacher gave me
- ∴ This computer program is correct

#37. If the five statements below are true, where is the buried treasure?
1. If the house is next to the lake, then the treasure is not in the kitchen.
2. If the tree in the front yard is an elm, then the treasure is in the kitchen.
3. The house is next to a lake
4. The tree in the front yard is an elm or the treasure is buried under a flagpole
5. If the tree in the back yard is an oak, the treasure is in the garage.

From the set of premises given below, use the standard argument forms to deduce the conclusion. Justify each step

#41
a. \( \neg p V q \rightarrow r \)
b. \( s V \neg q \)
c. \( \neg t \)
d. \( p \rightarrow t \)
e. \( \neg p \land r \rightarrow \neg s \)
∴ \( \neg q \)

#43
a. \( \neg p \rightarrow r \land \neg s \)
b. \( t \rightarrow s \)
c. \( u \rightarrow \neg p \)
d. \( \neg w \)
e. \( u V w \)
∴ \( \neg t \)
Knaves (Liars) and Knights (Truth Tellers)

A says: B is a Knight
B says: A and I are opposite types

Assume A is a Knight → B is a Knight → A is a Knave #
Assume A is a Knave → B is a Knave (why?) → B’s statement is a lie so no contradiction!

∴ A and B are Knaves

A says: B is a Knight
B says: A is a Knave

Assume A is a Knight → B is a Knight → A is a Knave #
Assume A is a Knave → B is a Knave → A is a Knight #

∴ self-contradictory

Written Homework #6 – Due W 9/11/13

Exercise Set 2.3 (p.61) #24 - #28, #38, #39, #42