Section 1.5: Defining the Converse, Inverse, and Contrapositive of a Conditional

Given the Implication: $P \rightarrow Q$

The Converse:

The Inverse:

The Contrapositive:

Examples: Create each given the conditionals:

If it snows, then we will go skiing.

The converse:

The inverse:

The Contrapositive:

If it does not stop raining, then we cannot go outside.

The converse:

The inverse:

The Contrapositive:

Logical Equivalence Relationships of the Conditional

Given: If you do not eat your veggies, then you cannot watch TV.

The Converse:

The Inverse:

The Contrapositive.

Which of the above is logically equivalent to the original conditional?

Truth tables for the given implication, the conditional, the inverse, and the contrapositive.

The given implication:

The converse:

The inverse:

The contrapositive:

Truth Tables and comparison for each.

General rule for logically equivalent statements of the conditional.

Create logically equivalent statements for each.

1. If today is not sunny, then we cannot go to the beach.

Logically Equivalent:

2. Today is Wednesday and you have Math 142.

Logically Equivalent:

3. If $x \geq 7$, then $y < 10$.

Logically equivalent statement:

4. If $m = 17$, the $n > 12$.

Logically equivalent statement: