

1. True or False. The converse of

If you get an A on the final exam, then you'll get an A for the course.

is

If you get an A for the course, then you got an A on the final exam.

Answer. True. If you let p be the proposition *you get an A on the final exam* and let q be the proposition *you get an A for the course*. Then the original implication is $p \rightarrow q$ and the second is the converse $q \rightarrow p$.

2. Prove or disprove: $p \rightarrow (q \rightarrow r) \equiv (p \rightarrow q) \rightarrow r$ for all propositions p, q, r .

Answer. This statement is false. To prove it, consider the case that $p, q,$ and r are all false. On the lefthand side we have $p \rightarrow (q \rightarrow r)$ which is an implication of the form $F \rightarrow T$ which is true. On the righthand side, we have $(p \rightarrow q)$ which is an implication of the form $T \rightarrow F$ which is false.