Hint sequences by state: $P \rightarrow Q \rightarrow R \rightarrow P \vee Q \,\&\, \neg R \vee \neg R$

Start

Recall the two things that determine the order in which we insert missing parentheses:
1) The order of precedence of the connectives
(¬, &, v, →)
2) The convention that if there are multiple occurrences of a given connective, we insert parentheses around the rightmost occurrence first.

Since we never insert parentheses around negations, the connective with the highest precedence, the first connective around which parentheses should be inserted is conjunction, the connective with the next highest precedence.

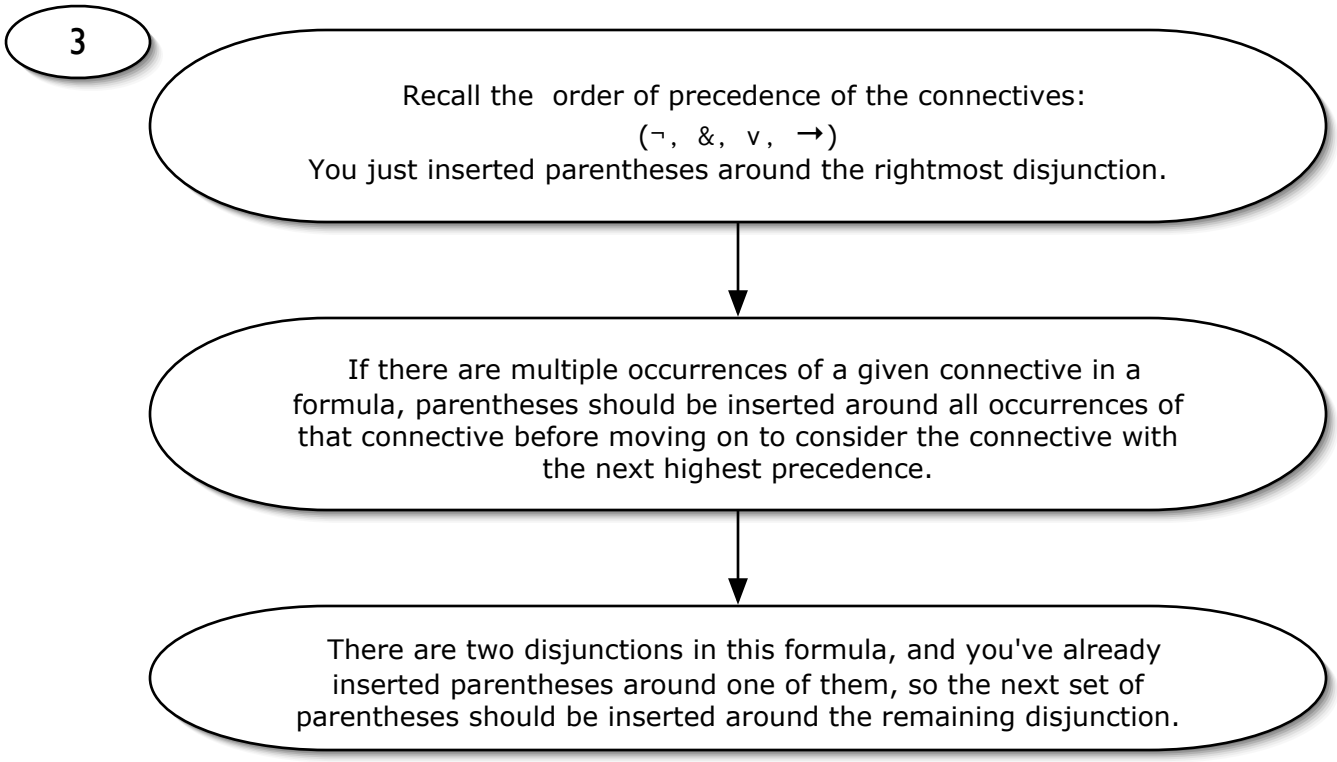
There is only one occurrence of a conjunction symbol in this formula, so that is the connective around which the first pair of parentheses should be inserted.

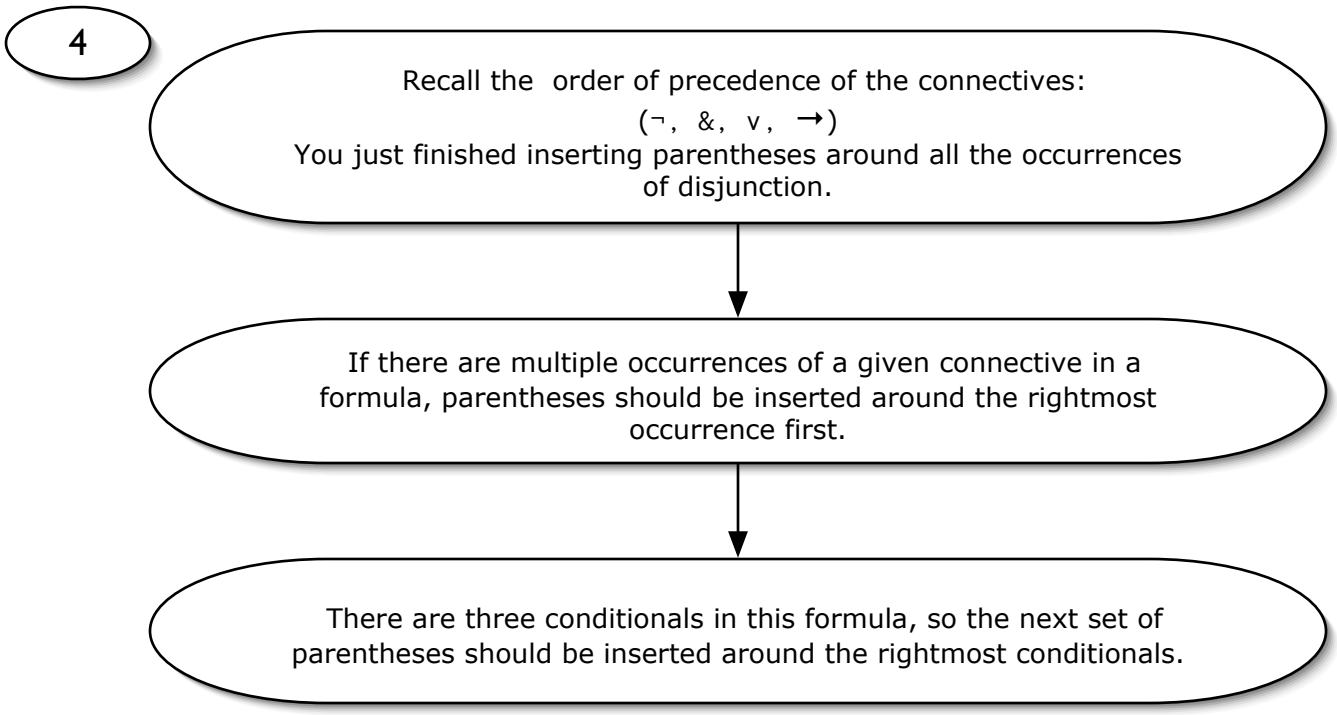
2

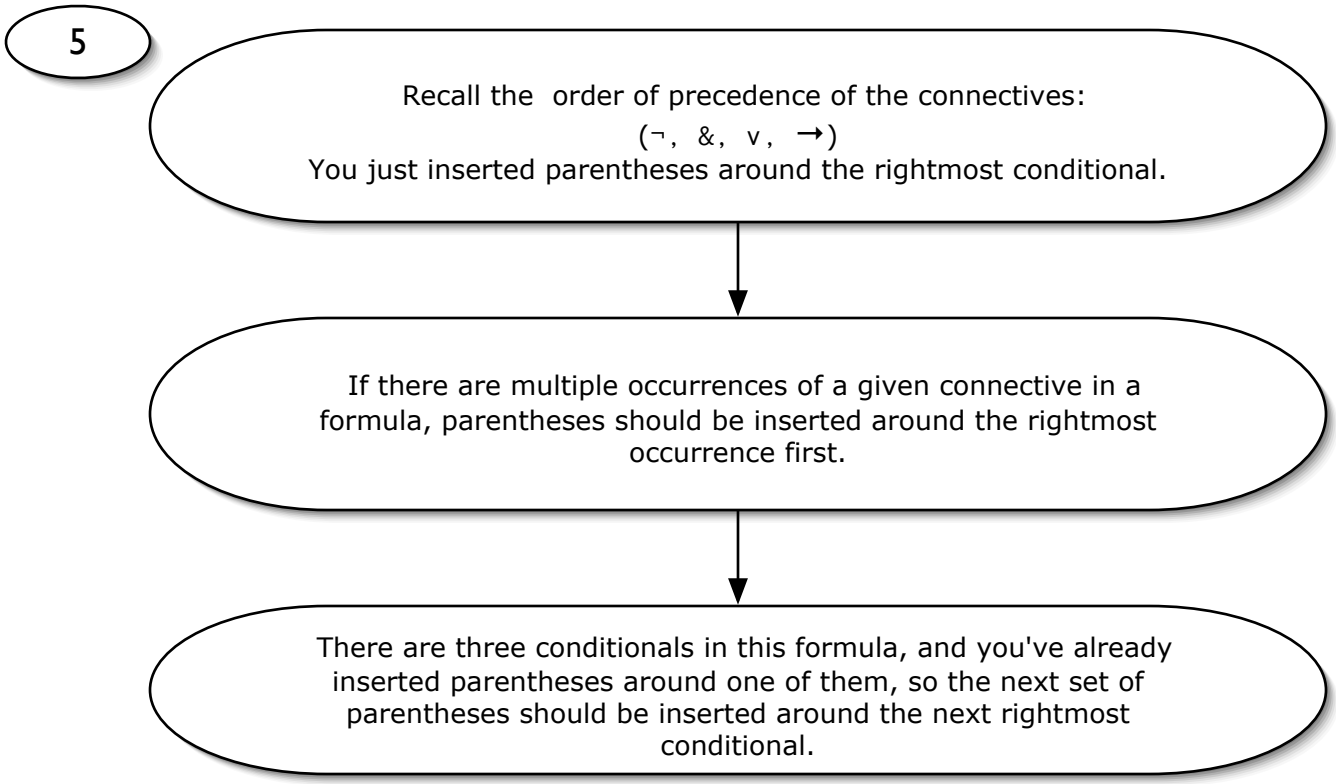
Recall the order of precedence of the connectives:
(¬, &, v, →)
You just finished inserting parentheses around all the occurrences of conjunction.

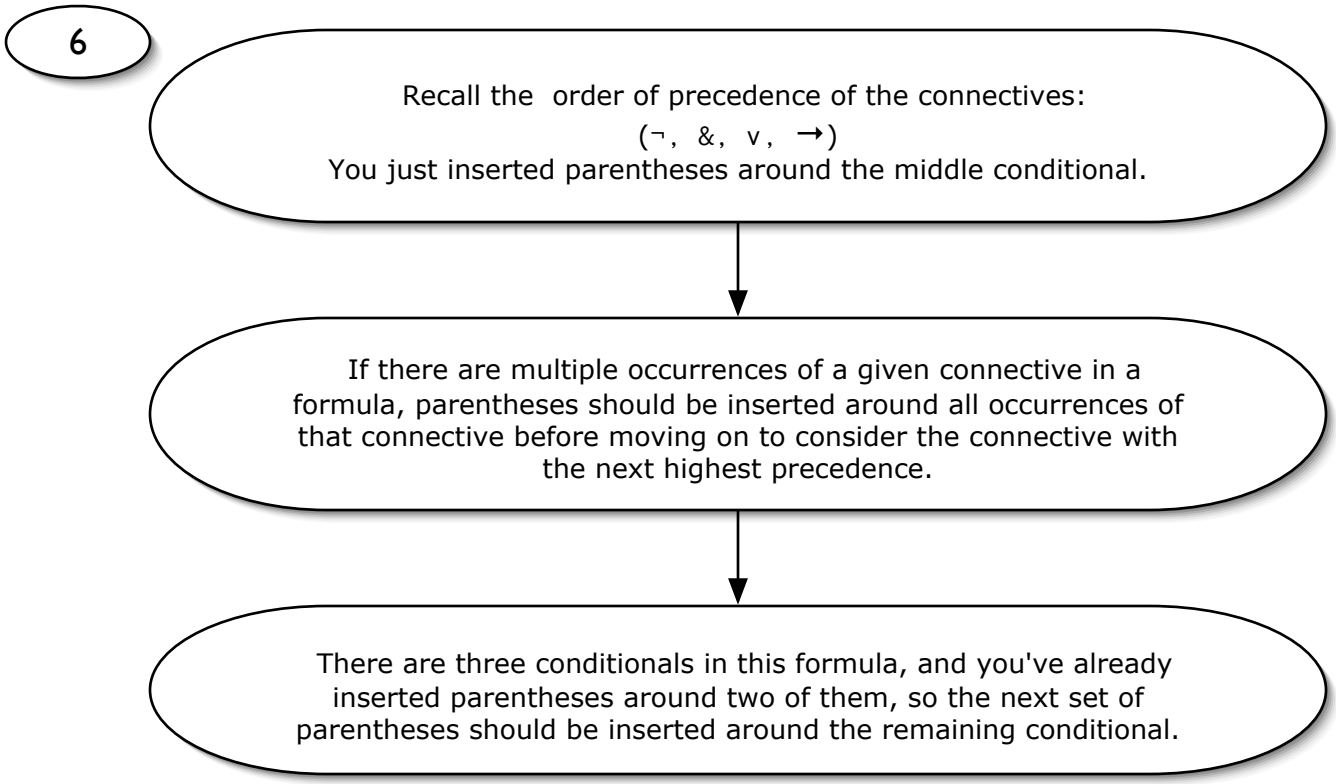
If there are multiple occurrences of a given connective in a formula, parentheses should be inserted around the rightmost occurrence first.

There are two disjunctions in this formula, so the next set of parentheses should be inserted around the rightmost disjunction.


3
Recall the order of precedence of the connectives:
(¬, &, v, →)
You just inserted parentheses around the rightmost disjunction.
If there are multiple occurrences of a given connective in a formula, parentheses should be inserted around all occurrences of that connective before moving on to consider the connective with the next highest precedence.
There are two disjunctions in this formula, and you've already inserted parentheses around one of them, so the next set of parentheses should be inserted around the remaining disjunction.


4
Recall the order of precedence of the connectives:
(¬, &, v, →)
You just finished inserting parentheses around all the occurrences of disjunction.
If there are multiple occurrences of a given connective in a formula, parentheses should be inserted around the rightmost occurrence first.
There are three conditionals in this formula, so the next set of parentheses should be inserted around the rightmost conditionals.


5
Recall the order of precedence of the connectives:
(¬, &, v, →)
You just inserted parentheses around the rightmost conditional.
If there are multiple occurrences of a given connective in a formula, parentheses should be inserted around the rightmost occurrence first.
There are three conditionals in this formula, and you've already inserted parentheses around one of them, so the next set of parentheses should be inserted around the next rightmost conditional.


6
Recall the order of precedence of the connectives:
(¬, &, v, →)
You just inserted parentheses around the middle conditional.
If there are multiple occurrences of a given connective in a formula, parentheses should be inserted around all occurrences of that connective before moving on to consider the connective with the next highest precedence.
There are three conditionals in this formula, and you've already inserted parentheses around two of them, so the next set of parentheses should be inserted around the remaining conditional.