Rules of Truth-Tree Construction

1. Any time a formula occurs in a tree and the negation (if it is a negation, its affirmation) of the formula at some line below it on a connected branch one places an X underneath the formula, signifying that the branch is closed.

○
¬○
X

2. A formula with two negations applying directly to it can be replaced on a line by the formula itself.

¬¬○
○

3.) A negated conditional is broken down into a single trunk with the affirmation of the antecedent followed by the negation of the consequent.

✓¬ (○ → △)
○
¬ △

4.) A conditional is broken down into two separate trunks, one trunk with the negation of the antecedent, and one with the affirmation of the consequent.

✓(○ → △)
¬○ △

5.) A conjunction is broken down into a single trunk with the affirmation of both conjuncts stacked.

✓(○ ∧ △)
○
△

6.) A disjunction is broken down into two trunks, one trunk for each disjunct.

✓(○ ∨ △)
○ △

7.) A biconditional is broken down into two trunks, one trunk has both the affirmation of the antecedent and the consequent, and the second trunk has the negation of both the antecedent and consequent.

✓(○ ≡ △)
○ ¬△
△ ¬○

8.) A negated conjunction is broken down into two trunks; each trunk has a negation of one of the conjuncts.

✓¬(○ ∧ △)
¬○ ¬△

9.) A negated disjunction is broken down into a single trunk with each disjunct negated.

✓¬(○ ∨ △)
¬○
¬△

10.) A negated biconditional is broken down into two trunks, one trunk contains the negation of the antecedent, and the affirmation of the consequent, the other trunk contains the affirmation of the antecedent, and the negation of the consequent.

✓¬(○ ≡ △)

¬ ○ ○

△ ¬△