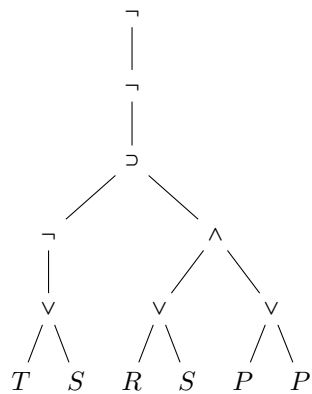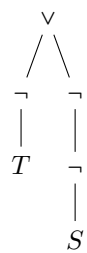For each of the syntax trees, produce the corresponding sentence.
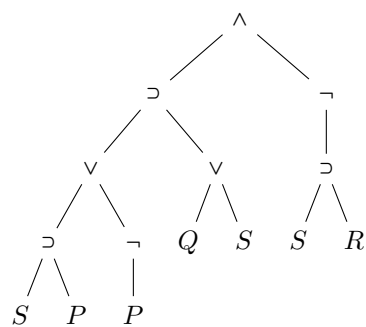
1.

$$\neg\neg\{\neg(T \vee S) \supset [(R \vee S) \wedge (P \vee P)]\}$$
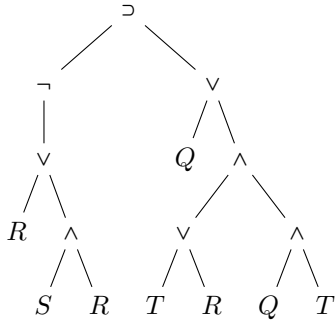
2.

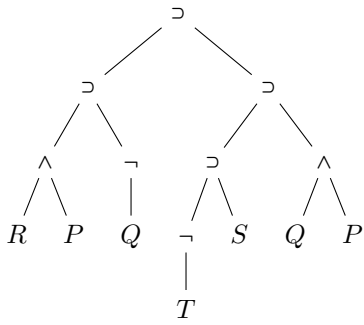$$\neg T \vee \neg\neg S$$

3.

$$\{[(S \supset P) \vee \neg P] \supset (Q \vee S)\} \wedge \neg(S \supset R)$$
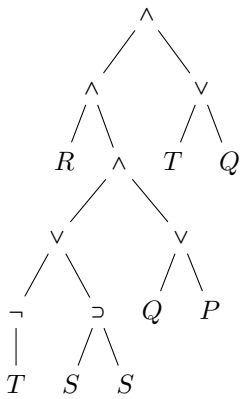
4.

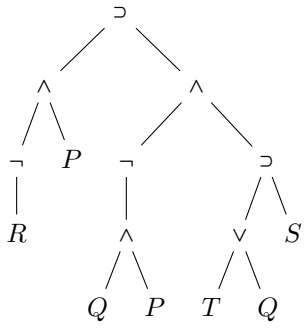$$\neg[R \vee (S \wedge R)] \supset \{Q \vee [(T \vee R) \wedge (Q \wedge T)]\}$$

5.

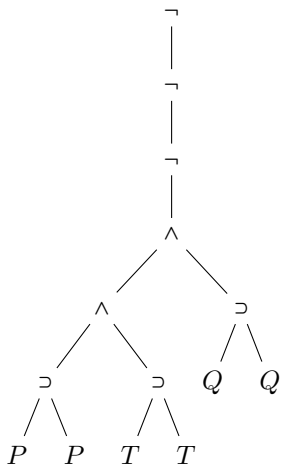$$[(R \wedge P) \supset \neg Q] \supset [(\neg T \supset S) \supset (Q \wedge P)]$$

6.

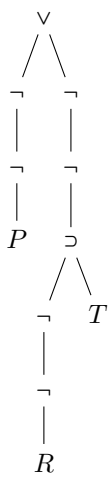$$\Big(R \wedge \{[\neg T \vee (S \supset S)] \wedge (Q \vee P)\}\Big) \wedge (T \vee Q)$$

7.

$(\neg R \wedge P) \supset \{\neg(Q \wedge P) \wedge [(T \vee Q) \supset S]\}$

8.
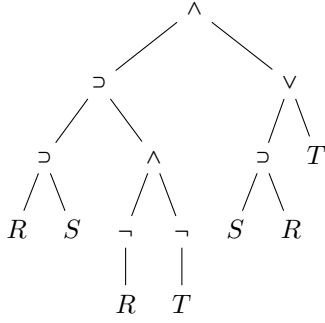
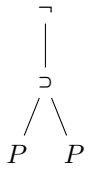$\neg\neg\neg\{[(P \supset P) \wedge (T \supset T)] \wedge (Q \supset Q)\}$

9.

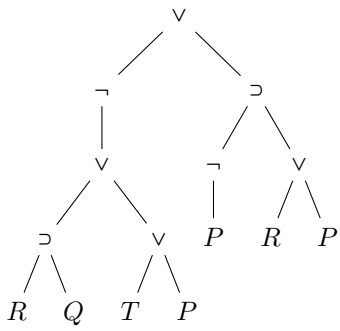$\neg\neg P \vee \neg\neg(\neg\neg R \supset T)$

10.

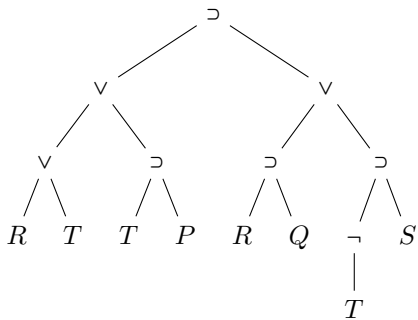$$[(R \supset S) \supset (\neg R \wedge \neg T)] \wedge [(S \supset R) \vee T]$$
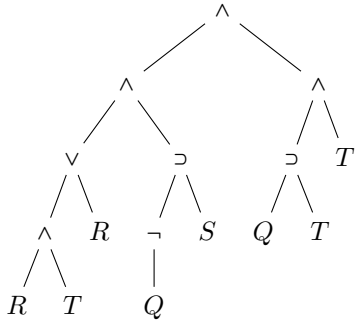
11.

$$\neg (P \supset P)$$

12.

$$\neg[(R \supset Q) \vee (T \vee P)] \vee [\neg P \supset (R \vee P)]$$
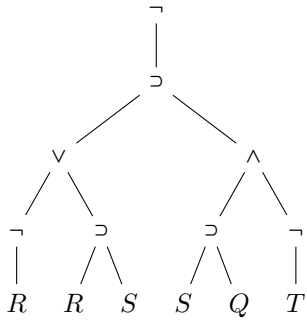
13.

4

$$[(R \lor T) \lor (T \supset P)] \supset [(R \supset Q) \lor (\neg T \supset S)]$$

14.

$$\{[(R \land T) \lor R] \land (\neg Q \supset S)\} \land [(Q \supset T) \land T]$$

15.

$$\neg\{[\neg R \lor (R \supset S)] \supset [(S \supset Q) \land \neg T]\}$$
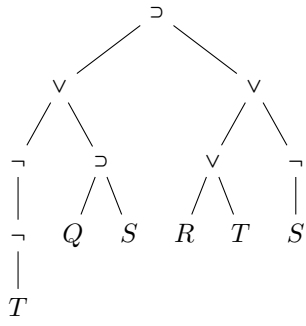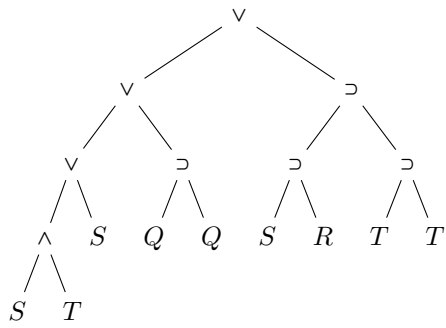
16.

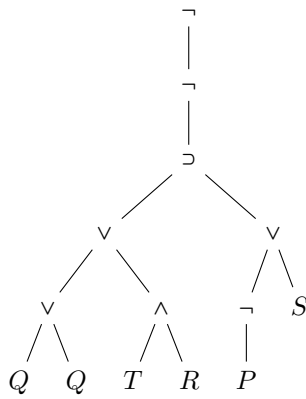
$$Q \lor R$$

17.

$$\neg R$$

18.

$$[\neg\neg T \vee (Q \supset S)] \supset [(R \vee T) \vee \neg S]$$
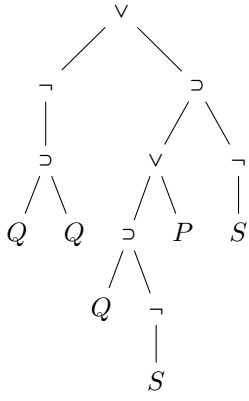
19.

$$\{[(S \wedge T) \vee S] \vee (Q \supset Q)\} \vee [(S \supset R) \supset (T \supset T)]$$
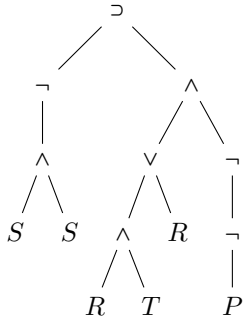
20.

$$\neg\neg\{[(Q \vee Q) \vee (T \wedge R)] \supset (\neg P \vee S)\}$$
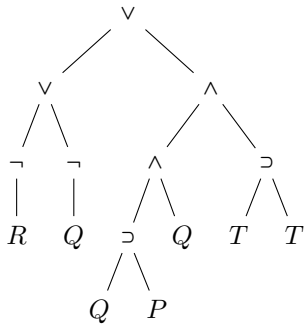
21.

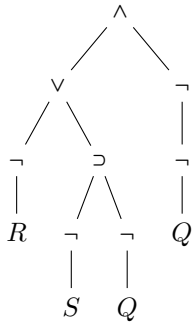$\neg(Q \supset Q) \vee \{[(Q \supset \neg S) \vee P] \supset \neg S\}$

22.

$\neg(S \wedge S) \supset \{[(R \wedge T) \vee R] \wedge \neg\neg P\}$

23.

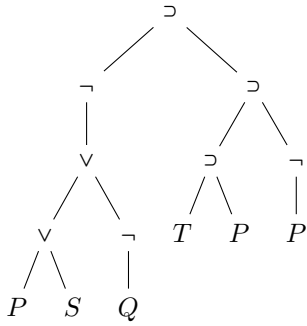$(\neg R \vee \neg Q) \vee \{[(Q \supset P) \wedge Q] \wedge (T \supset T)\}$

24.

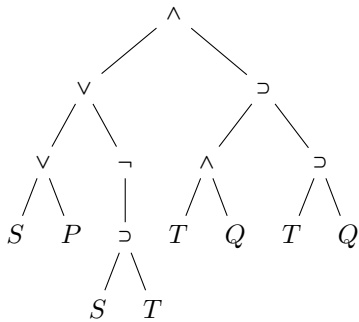$$[\neg R \vee (\neg S \supset \neg Q)] \wedge \neg\neg Q$$
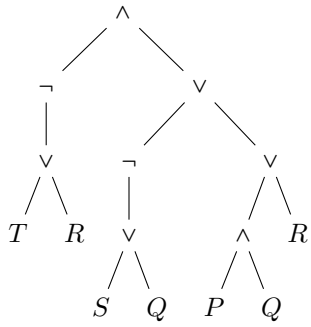
25.

$$\neg\neg(T \vee Q)$$

26.

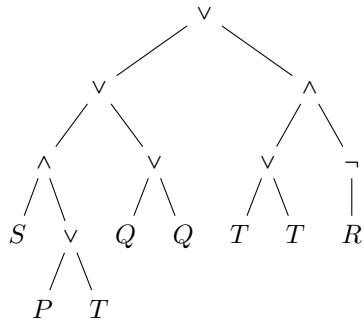$$\neg[(P \vee S) \vee \neg Q] \supset [(T \supset P) \supset \neg P]$$

27.

$[(S \vee P) \vee \neg(S \supset T)] \wedge [(T \wedge Q) \supset (T \supset Q)]$

28.
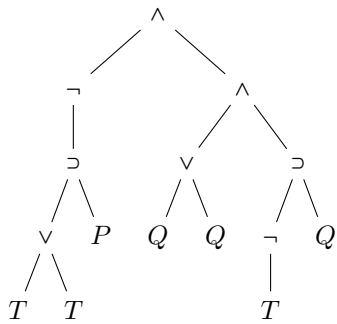

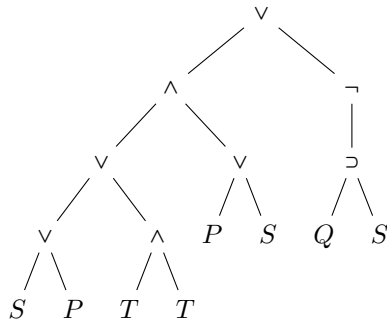$\neg(T \vee R) \wedge \{\neg(S \vee Q) \vee [(P \wedge Q) \vee R]\}$

29.

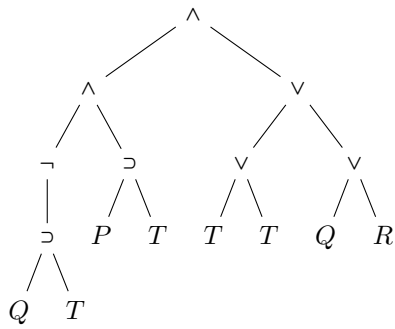$\{[S \wedge (P \vee T)] \vee (Q \vee Q)\} \vee [(T \vee T) \wedge \neg R]$

30.

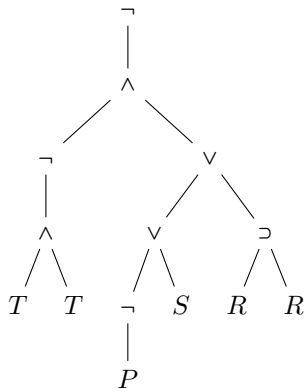$\neg[(T \vee T) \supset P] \wedge [(Q \vee Q) \wedge (\neg T \supset Q)]$

31.

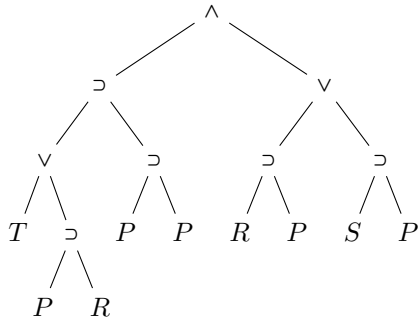$$\{[(S \vee P) \vee (T \wedge T)] \wedge (P \vee S)\} \vee \neg(Q \supset S)$$

32.

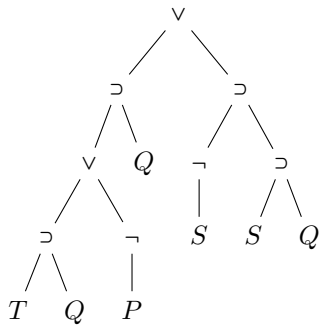$$[\neg(Q \supset T) \wedge (P \supset T)] \wedge [(T \vee T) \vee (Q \vee R)]$$

33.

$$\neg\{\neg(T \wedge T) \wedge [(\neg P \vee S) \vee (R \supset R)]\}$$
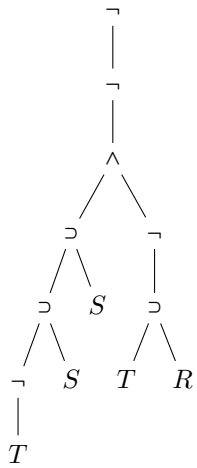
34.

$$\{[T \vee (P \supset R)] \supset (P \supset P)\} \wedge [(R \supset P) \vee (S \supset P)]$$

35.

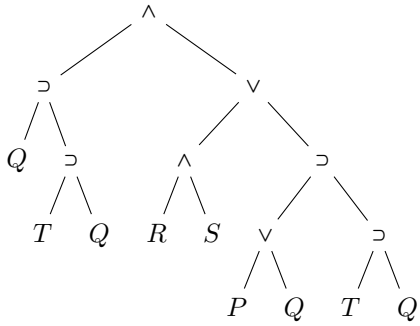$$\{[(T \supset Q) \vee \neg P] \supset Q\} \vee [\neg S \supset (S \supset Q)]$$

36.

$$\neg\neg\{[(\neg T \supset S) \supset S] \wedge \neg(T \supset R)\}$$
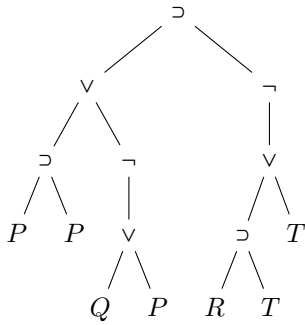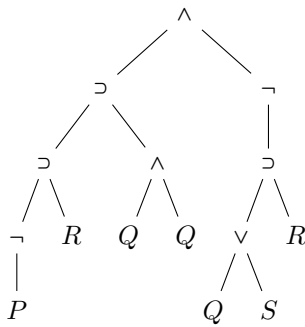
37.

$(T \wedge Q) \wedge \neg T$

38.

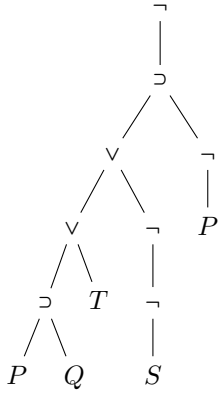$[Q \supset (T \supset Q)] \wedge \{(R \wedge S) \vee [(P \vee Q) \supset (T \supset Q)]\}$

39.

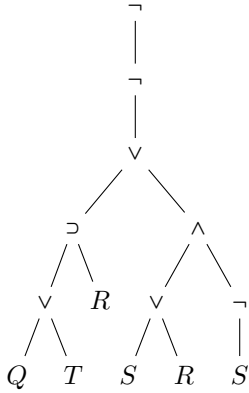$[(P \supset P) \vee \neg(Q \vee P)] \supset \neg[(R \supset T) \vee T]$

40.

$[(\neg P \supset R) \supset (Q \land Q)] \land \neg[(Q \lor S) \supset R]$

41.

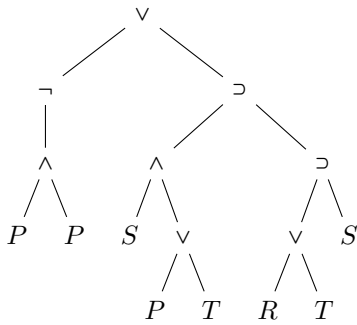$\neg\Big(\{[(P \supset Q) \lor T] \lor \neg\neg S\} \supset \neg P\Big)$

42.

$\neg\neg\{[(Q \lor T) \supset R] \lor [(S \lor R) \land \neg S]\}$

43.

$\neg(P \land P) \lor \{[S \land (P \lor T)] \supset [(R \lor T) \supset S]\}$

44.
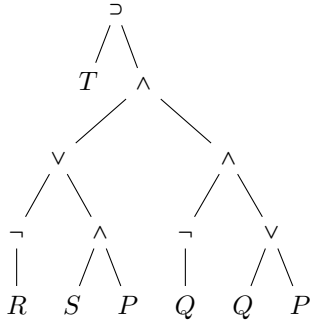
$T \supset \{[\neg R \lor (S \land P)] \land [\neg Q \land (Q \lor P)]\}$

45.
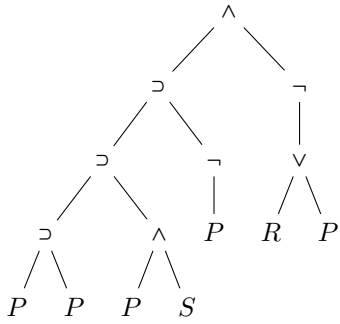
$\{[(P \supset P) \supset (P \land S)] \supset \neg P\} \land \neg(R \lor P)$

46.
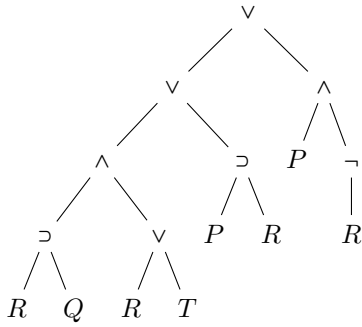
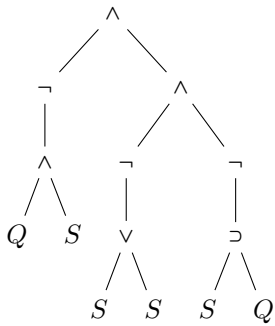$\{[(R \supset Q) \land (R \lor T)] \lor (P \supset R)\} \lor (P \land \neg R)$

47.
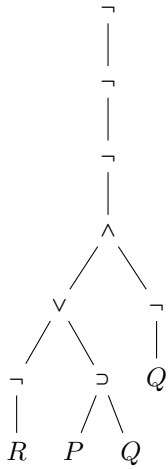
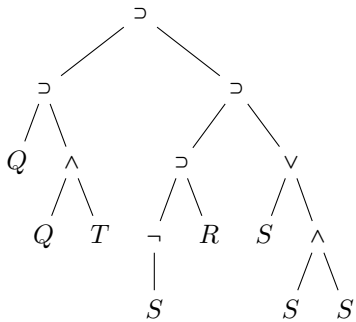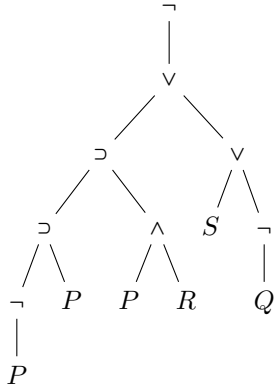$\neg\neg\neg\{[\neg R \vee (P \supset Q)] \wedge \neg Q\}$

48.

$S \wedge S$

49.

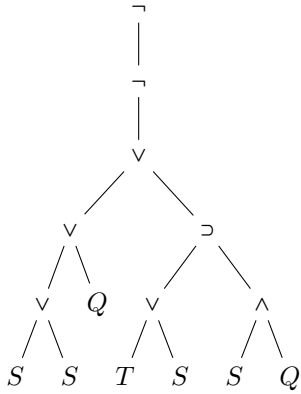$\neg(Q \wedge S) \wedge [\neg(S \vee S) \wedge \neg(S \supset Q)]$

50.

$$[Q \supset (Q \wedge T)] \supset \{(\neg S \supset R) \supset [S \vee (S \wedge S)]\}$$
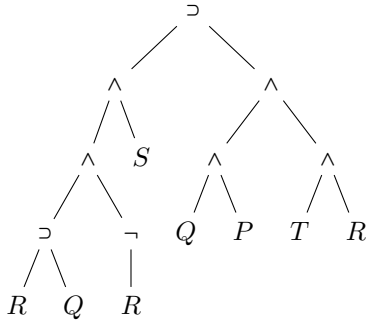
51.

$$\neg\{[(\neg P \supset P) \supset (P \wedge R)] \vee (S \vee \neg Q)\}$$

52.
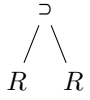

$$\neg\neg\{[(S \vee S) \vee Q] \vee [(T \vee S) \supset (S \wedge Q)]\}$$
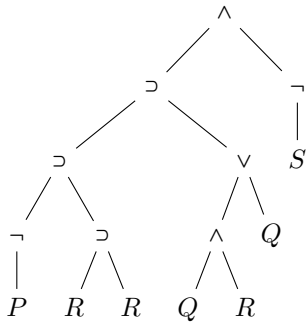
53.

$$\{[(R \supset Q) \wedge \neg R] \wedge S\} \supset [(Q \wedge P) \wedge (T \wedge R)]$$
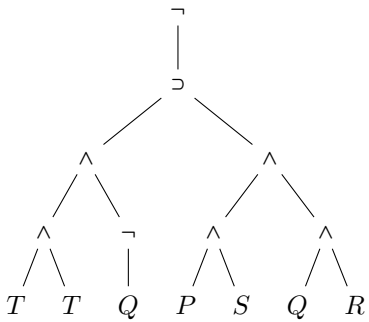
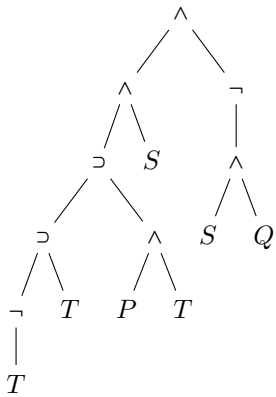**54.**

$$R \supset R$$

55.

$$\{[\neg P \supset (R \supset R)] \supset [(Q \wedge R) \vee Q]\} \wedge \neg S$$

56.

$$\neg\{[(T \wedge T) \wedge \neg Q] \supset [(P \wedge S) \wedge (Q \wedge R)]\}$$

57.

$\{[(\neg T \supset T) \supset (P \land T)] \land S\} \land \neg(S \land Q)$

58.

$\neg\left(\{[(P \lor T) \land S] \lor (T \lor Q)\} \land [R \lor (S \land R)]\right)$

59.

$\{\neg(T \lor P) \land [(S \land S) \lor \neg T]\} \land \neg P$

60.

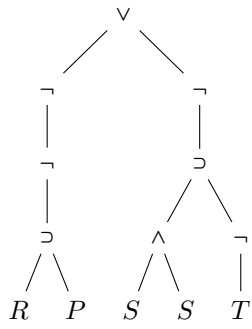$\{[T \lor (S \lor R)] \lor (Q \lor \neg R)\} \supset \neg(T \land Q)$
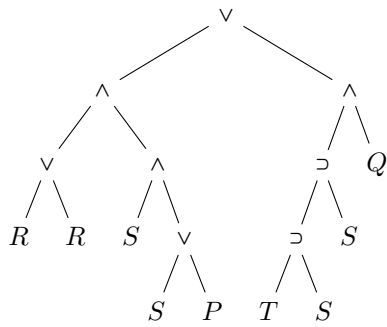
61.
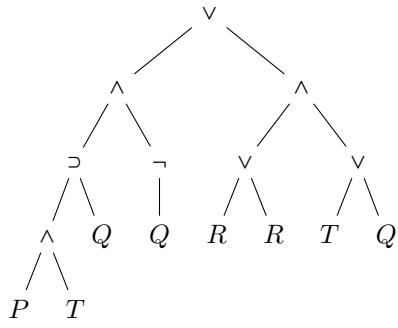
$$\{[(P \wedge T) \supset Q] \wedge \neg Q\} \vee [(R \vee R) \wedge (T \vee Q)]$$
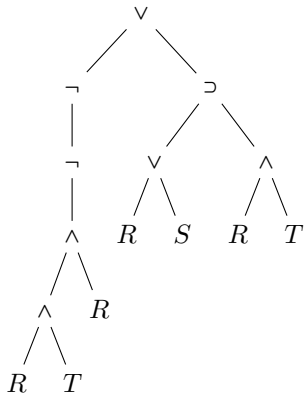
62.

$$\neg\neg(R \supset P) \vee \neg[(S \wedge S) \supset \neg T]$$

63.

$$\{(R \vee R) \wedge [S \wedge (S \vee P)]\} \vee \{[(T \supset S) \supset S] \wedge Q\}$$
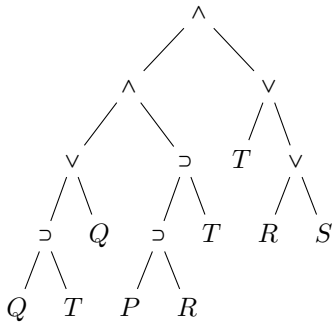
64.

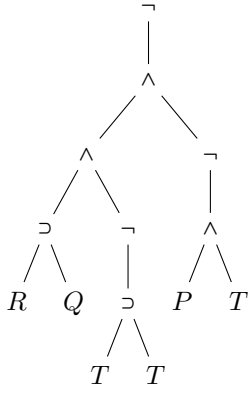$\neg\neg[(R \wedge T) \wedge R] \vee [(R \vee S) \supset (R \wedge T)]$
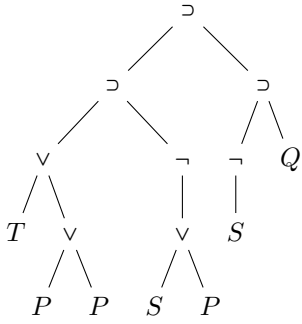
65.

$\neg(T \wedge S)$

66.

$\{[(Q \supset T) \vee Q] \wedge [(P \supset R) \supset T]\} \wedge [T \vee (R \vee S)]$
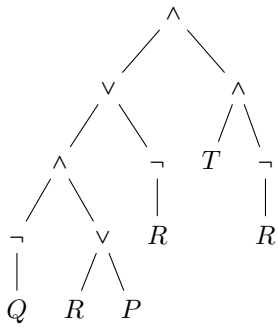
67.

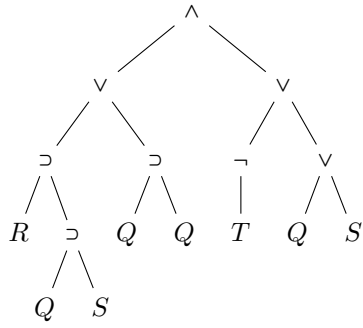$$\neg\{[(R \supset Q) \wedge \neg(T \supset T)] \wedge \neg(P \wedge T)\}$$

68.

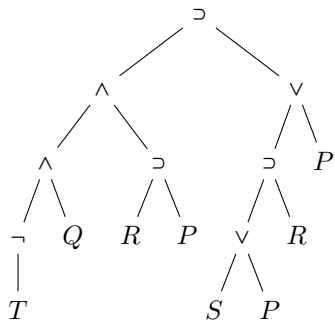$$\{[T \vee (P \vee P)] \supset \neg(S \vee P)\} \supset (\neg S \supset Q)$$

69.

$$\{[\neg Q \wedge (R \vee P)] \vee \neg R\} \wedge (T \wedge \neg R)$$
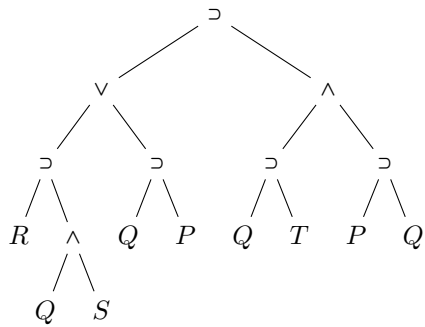
70.

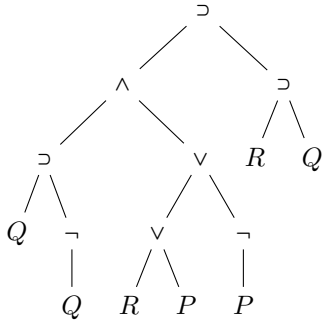$$\{[R \supset (Q \supset S)] \vee (Q \supset Q)\} \wedge [\neg T \vee (Q \vee S)]$$

71.

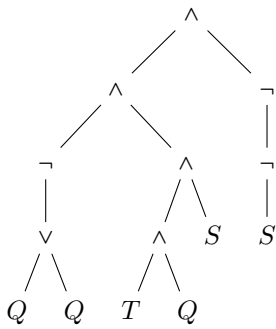$$[(\neg T \wedge Q) \wedge (R \supset P)] \supset \{[(S \vee P) \supset R] \vee P\}$$

72.

$$\{[R \supset (Q \wedge S)] \vee (Q \supset P)\} \supset [(Q \supset T) \wedge (P \supset Q)]$$
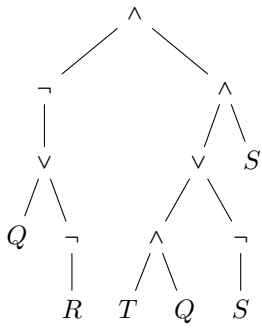
73.

$$\{(Q \supset \neg Q) \wedge [(R \vee P) \vee \neg P]\} \supset (R \supset Q)$$
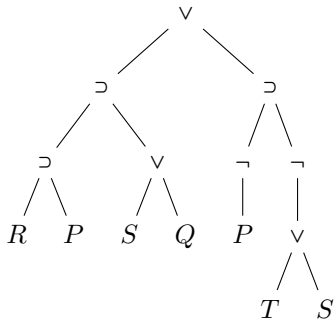
74.

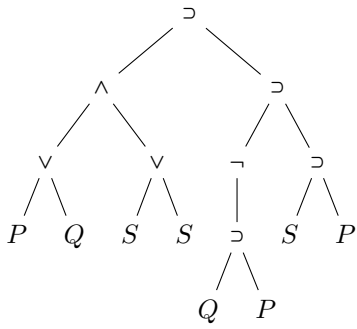$$\{\neg(Q \vee Q) \wedge [(T \wedge Q) \wedge S]\} \wedge \neg\neg S$$

75.

$$\neg(Q \vee \neg R) \wedge \{[(T \wedge Q) \vee \neg S] \wedge S\}$$
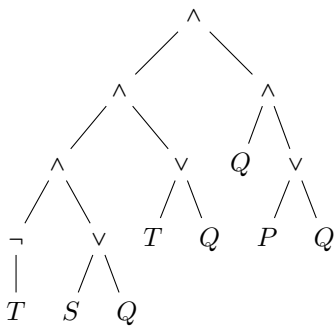
76.

$$[(R \supset P) \supset (S \vee Q)] \vee [\neg P \supset \neg(T \vee S)]$$
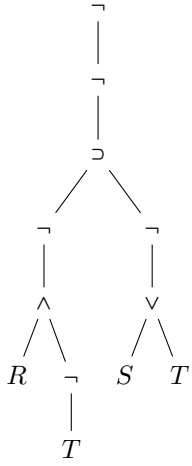
77.

$$[(P \vee Q) \wedge (S \vee S)] \supset [\neg(Q \supset P) \supset (S \supset P)]$$
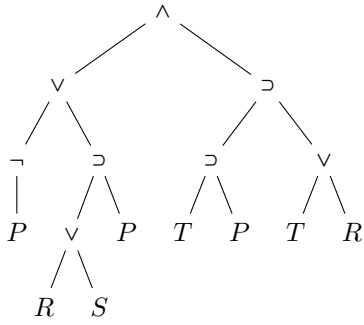
78.

$$\{[\neg T \wedge (S \vee Q)] \wedge (T \vee Q)\} \wedge [Q \wedge (P \vee Q)]$$
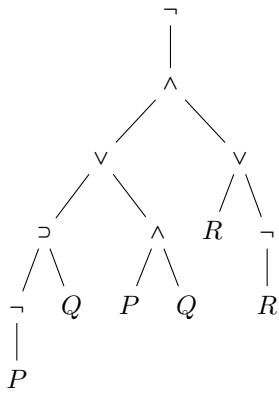
79.

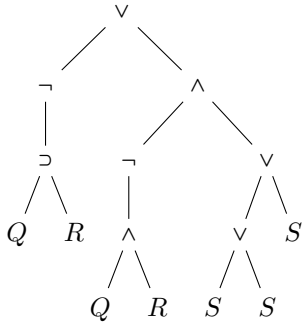$\neg\neg[\neg(R \wedge \neg T) \supset \neg(S \vee T)]$

80.

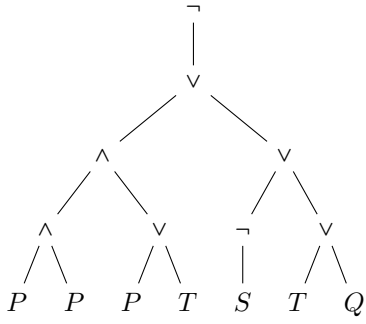$\{\neg P \vee [(R \vee S) \supset P]\} \wedge [(T \supset P) \supset (T \vee R)]$

81.

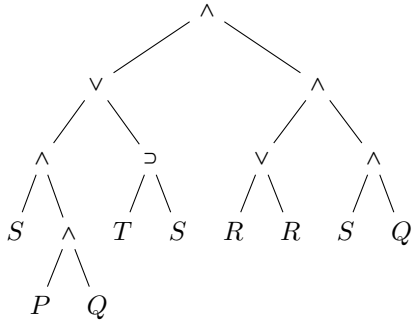$\neg\{[(\neg P \supset Q) \vee (P \wedge Q)] \wedge (R \vee \neg R)\}$

82.

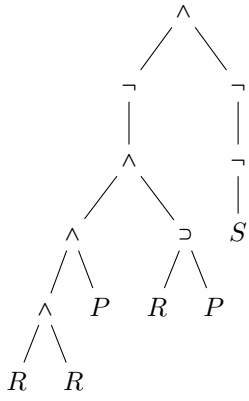$\neg(Q \supset R) \vee \{\neg(Q \wedge R) \wedge [(S \vee S) \vee S]\}$

83.

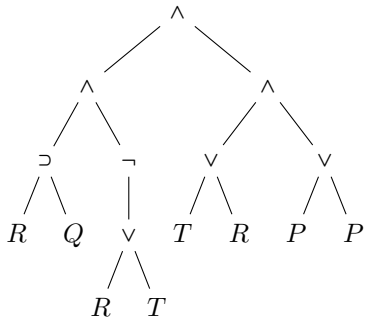$\neg\{[(P \wedge P) \wedge (P \vee T)] \vee [\neg S \vee (T \vee Q)]\}$

84.

$\{[S \wedge (P \wedge Q)] \vee (T \supset S)\} \wedge [(R \vee R) \wedge (S \wedge Q)]$

85.

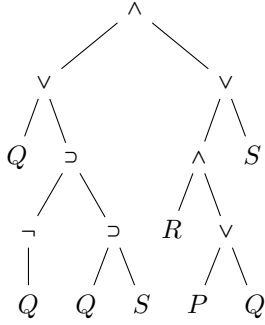$$\neg\{[(R \wedge R) \wedge P] \wedge (R \supset P)\} \wedge \neg\neg S$$

86.

$$[(R \supset Q) \wedge \neg(R \vee T)] \wedge [(T \vee R) \wedge (P \vee P)]$$
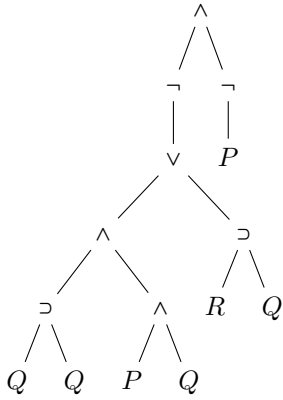
87.

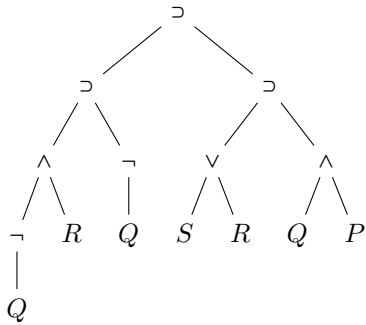$$\neg\neg\neg[\neg S \wedge \neg\neg(Q \vee Q)]$$

88.

$$\{Q \vee [\neg Q \supset (Q \supset S)]\} \wedge \{[R \wedge (P \vee Q)] \vee S\}$$
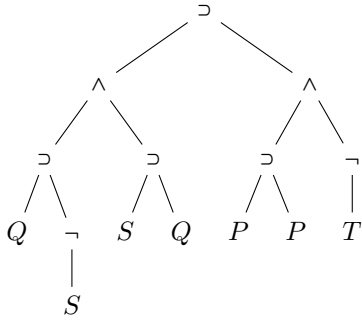
89.

$$\neg\{[(Q \supset Q) \wedge (P \wedge Q)] \vee (R \supset Q)\} \wedge \neg P$$
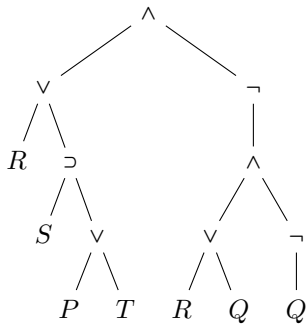
90.

$$[(\neg Q \wedge R) \supset \neg Q] \supset [(S \vee R) \supset (Q \wedge P)]$$
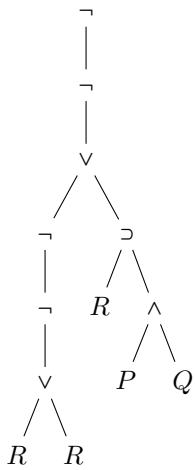
91.

$$[(Q \supset \neg S) \wedge (S \supset Q)] \supset [(P \supset P) \wedge \neg T]$$
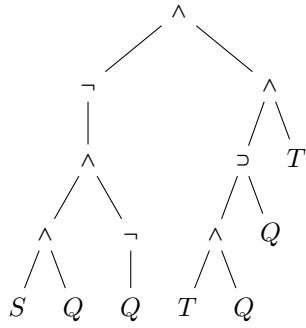
92.

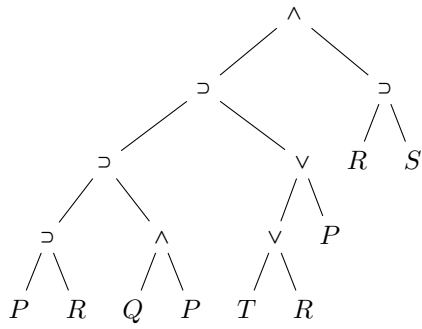$$\{R \vee [S \supset (P \vee T)]\} \wedge \neg[(R \vee Q) \wedge \neg Q]$$

93.

$$\neg\neg\{\neg\neg(R \vee R) \vee [R \supset (P \wedge Q)]\}$$

94.

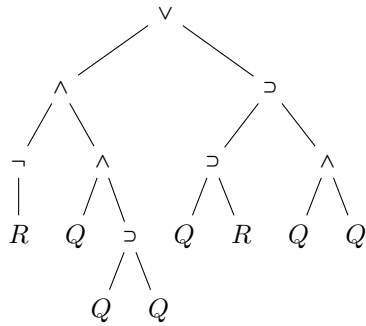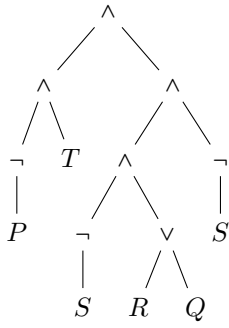$\neg[(S \land Q) \land \neg Q] \land \{[(T \land Q) \supset Q] \land T\}$

95.

$\{[(P \supset R) \supset (Q \land P)] \supset [(T \lor R) \lor P]\} \land (R \supset S)$
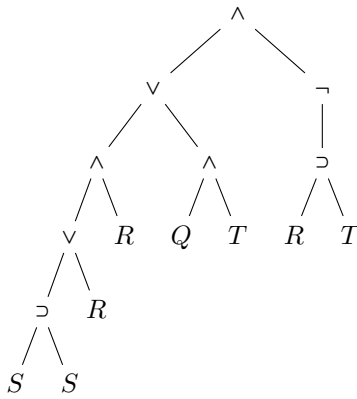
96.

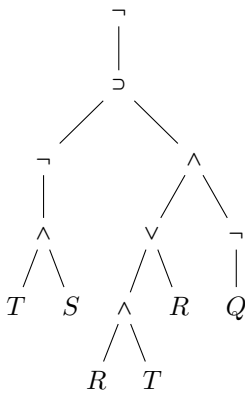$\{\neg R \land [Q \land (Q \supset Q)]\} \lor [(Q \supset R) \supset (Q \land Q)]$

97.

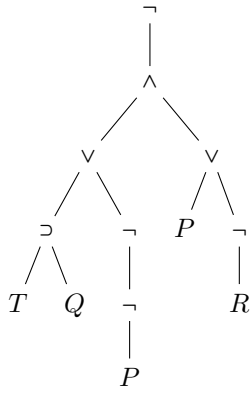$(\neg P \wedge T) \wedge \{[\neg S \wedge (R \vee Q)] \wedge \neg S\}$

98.

$\Big(\{[(S \supset S) \vee R] \wedge R\} \vee (Q \wedge T)\Big) \wedge \neg(R \supset T)$

99.

$\neg\Big(\neg(T \wedge S) \supset \{[(R \wedge T) \vee R] \wedge \neg Q\}\Big)$

100.

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                    ¬
                    │
                    ∧
                 ╱     ╲
                ∨       ∨
              ╱  ╲     ╱  ╲
             ⊃    ¬   P    ¬
            ╱ ╲   │        │
           T   Q  ¬        R
                  │
                  P
```

$\neg\{[(T \supset Q) \lor \neg\neg P] \land (P \lor \neg R)\}$