(11 points) Rewrite the formula \(((\pi_1) \to (\pi_7)) \land ((\pi_5) \lor (\neg(\pi_2)))\) with as few parentheses as possible for a correct formula.

Then, below the formula, draw a tree diagram for it. Then label each subformula with its rank.

(9 points) The string \(\pi_3 \lor \neg \pi_1 \to \pi_2\) is not a formula; it has too few parentheses. By inserting additional parentheses into \(\pi_3 \lor \neg \pi_1 \to \pi_2\) in different ways, obtain three correct formulas that are different in the sense that they would have different tree diagrams. (You are not required to draw the tree diagrams.)

\[
\pi_3 \lor \neg (\pi_1 \to \pi_2)
\]

\[
\pi_3 \lor ((\neg \pi_1) \to \pi_2)
\]

\[
(\pi_3 \lor \neg \pi_1) \to \pi_2
\]