1. Phrase Structure Rules and Syntax Trees

Consider the phrase structure rules in (0):

\[
(0) \quad S \rightarrow NP \ VP \\
\quad VP \rightarrow V (NP) \ (PP) \\
\quad NP \rightarrow (Det) \ (A^*) \ N \\
\quad NP \rightarrow \{ \ Name \ | \ Pro \} \\
\quad PP \rightarrow P \ NP
\]

(a) For each sentence below, is it generated by the phrase structure rules in (0)?
   If the sentence is generated, provide a tree for the sentence, following the rules in (0).
   If the sentence is not generated, provide a clear explanation of why not.

(1) The sheep won.
(2) The sheep won the race.
(3) The sheep won the race without any effort.
(4) The sheep won the race by a stroke of luck.
(5) The sheep is the winner.
(6) The sheep is the winner of the race.
(7) The winner of the race is the sheep.
(8) The mayor gave the sheep a prize.
(9) The mayor of the town gave the sheep on the podium a hat with a golden tassel.
(10) The unwieldy wisdom pickled some prominence through cheeseburgers.

(b) Pick one of the sentences above that is grammatical, but not generated by the rules in (0).
   Adjust a single one of the phrase structure rules so that the sentence can be generated.
   Now, give a tree for the sentence, according to your revised phrase structure rules.

(c) Extra Credit: Adjust another single phrase structure rule so that all ten sentences are generated.