7.15

a. The graph is simply a connected chain of 5 nodes, one per variable.
b. $n + 1$ solutions. Once any $X_i$ is true, all subsequent $X_j$s must be true. Hence the solutions are $i$ false followed by $n - i$ true, for $i = 0, \ldots, n$.
c. The complexity is $O(n^2)$. This is somewhat tricky. Consider what part of the complete binary tree is explored by the search. The algorithm must follow all solution sequences, which themselves cover a quadratic-sized portion of the tree. Failing branches are all those trying a false after the preceding variable is assigned true. Such conflicts are detected immediately, so they do not change the quadratic cost.

8.10

a. $O(E, S) \lor O(E, L)$.
b. $O(J, A) \land \exists p \ p \neq A \land O(J, p)$.
c. $\forall p \ O(p, S) \Rightarrow O(p, D)$.
d. $\neg \exists p \ C(J, p) \land O(p, L)$.
e. $\exists p \ B(p, E) \land O(p, L)$.
f. $\exists p \ O(p, L) \land \forall q \ C(q, p) \Rightarrow O(q, D)$.
g. $\forall p \ O(p, S) \Rightarrow \exists q \ O(q, L) \land C(p, q)$.