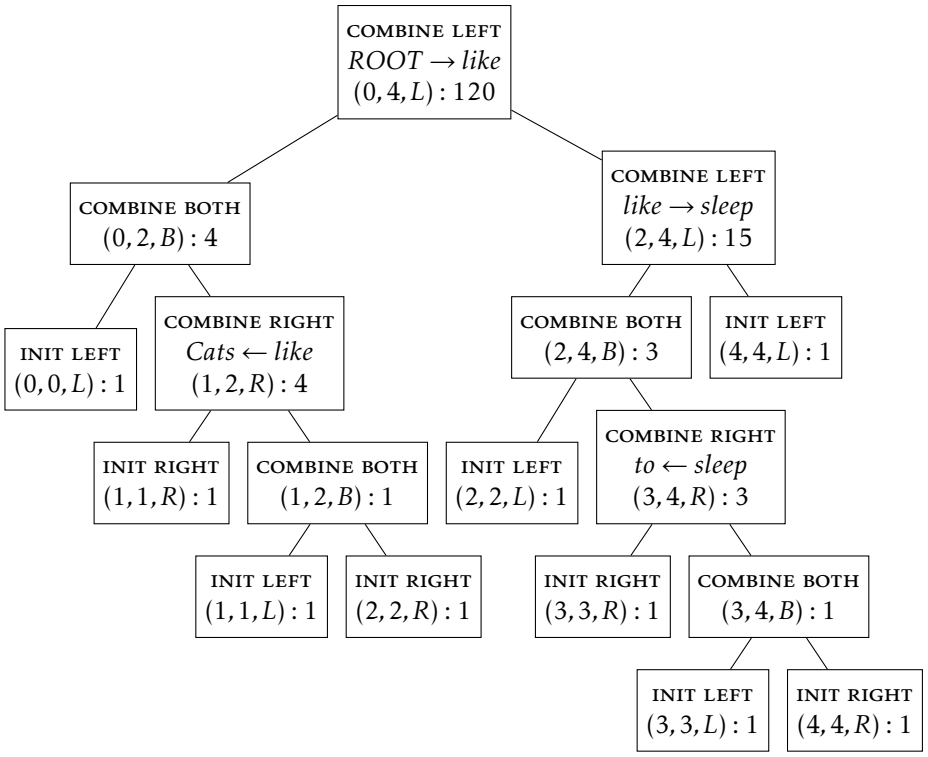
Dependency Parsing:
Parsing with the Eisner Algorithm

Solutions (updated)

a) Chart:

	0	1	2	3	4
5	$(0,4,B):36$ $(0,4,L):120$ $(0,4,R):0$				
4	$(0,3,B):8$ $(0,3,L):16$ $(0,3,R):0$	$(1,4,B):9$ $(1,4,L):0$ $(1,4,R):36$			
3	$(0,2,B):4$ $(0,2,L):8$ $(0,2,R):0$	$(1,3,B):0$ $(1,3,L):0$ $(1,3,R):0$	$(2,4,B):3$ $(2,4,L):15$ $(2,4,R):9$		
2	$(0,1,B):1$ $0,1,L):1$ $(0,1,R):0$	$(1,2,B):1$ $(1,2,L):0$ $(1,2,R):4$	$(2,3,B):1$ $(2,3,L):2$ $(2,3,R):0$	$(3,4,B):1$ $(3,4,L):0$ $(3,4,R):3$	
1	$(0,0,R):1$ $(0,0,L):1$	$(1,1,R):1$ $(1,1,L):1$	$(2,2,R):1$ $(2,2,L):1$	$(3,3,R):1$ $(3,3,L):1$	$(4,4,R):1$ $(4,4,L):1$

Tree of successful items:



The tree is the same one found by the Chu-Liu-Edmonds algorithm.

b) The Chu-Liu-Edmonds algorithm finds the dependency tree with the highest weight. The Eisner algorithm finds the *projective* dependency tree with the highest weight. Therefore, both algorithms find the same tree if and only if the dependency tree with the highest weight is projective.