CSE 341 — CLP(R) Discussion Questions

These questions use the following CLP(R) rules:

/* CENTIGRADE-FAHRENHEIT TEMPERATURE CONVERSION */
cf(C,F) :- 1.8*C = F-32.0.

double(X,2*X).

append([],Ys,Ys).
append([X|Xs],Ys,[X|Zs]) :- append(Xs,Ys,Zs).

max(X,Y,X) :- X>=Y.
max(X,Y,Y) :- X<Y.

1. What are all the answers that CLP(R) returns for the following goals?

   append([1,2,3], A, [1,2,3,4,5,6]).
   append([1,2,3], A, [2,3,4,5,6]).
   append(A, B, [1,2]).
   append(A, [3|B], [1,2,3,4,5,3,7,11]).

2. Show the complete derivation tree for the goal cf(X,X).
3. Show the simplified derivation tree for the goal cf(X,X).
4. Show the simplified derivation tree for the goal double(A,B), double(B,100).
5. Show the simplified derivation tree for the goal append(A, [3|B], [1,2,3,4,5,3,7,11]).
6. Show the simplified derivation tree for the goal max(10,3,N).
7. Show the simplified derivation tree for the goal max(A,B,100).