# CSE 341 — CLP($\mathcal{R}$) Discussion Questions

These questions use the following CLP($\mathcal{R}$) 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($\mathcal{R}$) 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).`