1993 Paper 11 Question 4

Prolog

The following Prolog clauses define the procedure named `reverse`. The goal `reverse(X,Y)` succeeds for the list `X`, instantiating `Y` to the reverse of the list `X`. For example, evaluating the goal `reverse([a,b,c],Q)` instantiates `Q` to `[c,b,a]`.

```
reverse(X,Y) :- rev(X,[],Y).

rev([],L,L).
rev([H|T],R,Y) :- rev(T,[H|R],Y).
```

Explain how this procedure works, using a small example. [10 marks]

What is the outcome of the goal `reverse(L,[a,b,c])`? Explain your answer carefully. [10 marks]