

# Prolog for Artificial Intelligence 2000

p 5q 7

WFC

p 12q 8

The procedure recurs down the input list until the end is reached, which initialises the sum to 0. The sum is then accumulated on the way back up. The program executes inefficiently because it requires temporary variable space (stack frames) as many as there are elements of the list. An alternative definition is as follows:

```
area([], X, X).
area([v(X1,Y1), v(X2,Y2) | VS], Acc, Area) :-
    Acc2 is Acc + (X1 * Y2 - Y1 * X2) / 2,
    area([v(X2,Y2) | VS], Acc2, Area).
```

This is called with the goal `area(L,0,A)` to initialise the accumulator to 0. This executes more efficiently because using an accumulator, it is possible to reorder the subgoals in the form of a tail-recursive procedure, which executes iteratively.