

Length of Reversion

LISTS_LENGTHREV_4512036658964875

Proposition 0.1. $\text{length}(\text{rev}(L)) = \text{length}(L)$ for any list L .

Proof by induction on L . Let L be a list.

Case $L = []$. Trivial.

Case $L = a :: L'$ for some object a and some list L' . Take an object a and a list L' such that $L = a :: L'$. Then $L' \prec L$. Hence $\text{length}(\text{rev}(L')) = \text{length}(L')$. Thus $\text{length}(\text{rev}(L)) = \text{length}(\text{rev}(a :: L')) = \text{length}(\text{rev}(L') ++ [a]) = \text{length}([a]) + \text{length}(\text{rev}(L')) = 1 + \text{length}(\text{rev}(L')) = 1 + \text{length}(L') = \text{length}(L)$. End. \square