

Exercício 56. Prove que $\text{rev}(\text{rev}(l)) = l$, qualquer que seja a lista l .

A prova é por indução na estrutura da lista l .

– Se $l = \text{nil}$ então $\text{rev}(\text{rev}(l)) = \text{rev}(\text{rev}(\text{nil})) = \text{rev}(\text{nil}) = \text{nil} = l$.

– Se $l = h::tl$ então $\text{rev}(\text{rev}(l)) = \text{rev}(\text{rev}(h::tl)) =$

$\text{rev}(\text{rev}(tl) \circ (h::\text{nil})) \stackrel{\text{ex.55}}{=} \text{rev}(h::\text{nil}) \circ \text{rev}(\text{rev}(tl)) \stackrel{\text{(h.i.)}}{=}$

$\text{rev}(h::\text{nil}) \circ tl = (\text{rev}(\text{nil}) \circ (h::\text{nil})) \circ tl =$

$(\text{nil} \circ (h::\text{nil})) \circ tl = (h::\text{nil}) \circ tl = h::(\text{nil} \circ tl) =$

$h::tl = l$.

