

**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  $\text{rev}(\text{rev}(l)) = \text{rev}(\text{rev}(h::tl)) =$

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

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

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

$h::tl = l$ .

