# Proofster

```
Require Import List.
Import ListNotations.
Require Import Lia.

Definition max_elem_list (l: list nat) : nat := fold_right max 0 l.

Theorem every_elem_le_max : forall (l: list nat) (n: nat), (In n l) → (n ⩽
(max_elem_list l)).
Proof.
induction l.
intros.
simpl.
destruct n.
eauto.
destruct H.
simpl.
intros.
destruct H.
rewrite H.
intuition.
rewrite IHl.
intuition.
eauto.
Qed.
```

```
a : nat
l : list nat
IHl : forall n : nat, In n l → n ⩽ max_elem_list l
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forall n : nat,
In n (a :: l) → n ⩽ max_elem_list (a :: l)
```