

Inference at * 2 0
of proof for Lemma before_last:

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1. T : Type
2. T List
3. u : T
4. v : T List
5. ∀x:T. (x ∈ v) ⇒ (¬(x = last(v))) ⇒ x before last(v) ∈ v
⊢ ∀x:T. (x ∈ [u / v]) ⇒ (¬(x = last([u / v]))) ⇒ x before last([u / v]) ∈ [u / v]
  by InteriorProof PERMUTE{1:n,
                        2:n,
                        1:n,
                        2:n,
                        2:n,
                        3:n,
                        4:n,
                        3:n,
                        4:n,
                        4:n,
                        3:n,
                        3:n,
                        3:n,
                        3:n,
                        3:n,
                        3:n,
                        5:n,
                        6:n,
                        6:n,
                        3:n,
                        4:n,
                        4:n,
                        7:n,
                        5:n}

```

1:

```

6. x : T
7. (x ∈ [u / v])
⊢ ¬(↑null([u / v]))

```

2:

```

6. x : T
7. (x ∈ [u / v])
8. ¬(x = last([u / v]))

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$\vdash \neg(\uparrow \text{null}([u / v]))$
3:

6. T
 $\vdash \neg(\uparrow \text{null}([u / v]))$
4:

6. $x : T$
7. $\neg(x = \text{last}([u / v]))$
 $\vdash \neg(\uparrow \text{null}([u / v]))$
5:

6. $x : T$
7. $(x = u) \vee (x \in v)$
 $\vdash \neg(\uparrow \text{null}([u / v]))$
6:

6. $x : T$
7. $(x = u) \vee (x \in v)$
8. $\neg(x = \text{last}([u / v]))$
 $\vdash \neg(\uparrow \text{null}([u / v]))$
7:

6. $x : T$
7. $(x = u) \vee (x \in v)$
8. $\neg(x = \text{last}([u / v]))$
 $\vdash (x = u \ \& \ [\text{last}([u / v])] \subseteq v) \vee [x; \text{last}([u / v])] \subseteq v$

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