

Inference at * 2 2 1 1 1
of proof for Lemma before-adjacent:

1. $T : \text{Type}$
 2. $T \text{ List}$
 3. $u : T$
 4. $v : T \text{ List}$
 5. $\forall x, y:T.$
 $\text{no_repeats}(T;v)$
 $\Rightarrow \text{adjacent}(T;v;x;y)$
 $\Rightarrow (\forall z:T. z \text{ before } y \in v \Rightarrow (z \text{ before } x \in v \vee (z = x)))$
 6. $x : T$
 7. $y : T$
 8. $\text{no_repeats}(T;v)$
 9. $\neg(u \in v)$
 10. $0 < \|v\|$
 11. $\text{adjacent}(T;v;x;y)$
 12. $z : T$
 13. $z = u$
 14. $(y \in v)$
 15. $\forall z:T. z \text{ before } y \in v \Rightarrow (z \text{ before } x \in v \vee (z = x))$
- $\vdash z \text{ before } x \in [u / v]$
 by (((RWO "cons_before" (0))
 THENM (OrLeft)).)
 CollapseTHEN (Auto.)).

1:

$\vdash (x \in v)$

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