

Inference at * 1 0
of proof for Lemma linorder_functionality_wrt_iff:

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1. T : Type
2. R : T → T → ℙ
3. R' : T → T → ℙ
4. ∀ x, y:T. R(x,y) ⇔ R'(x,y)
⊢ (Order(T;x,y.R(x,y)) & Connex(T;x,y.R(x,y)))
  ⇔ (Order(T;x,y.R'(x,y)) & Connex(T;x,y.R'(x,y)))
  by PERMUTE{1:n,
              2:n,
              2:n,
              2:n,
              3:n,
              4:n,
              5:n,
              6:n,
              7:n,
              8:n,
              9:n,
              10:n,
              11:n,
              12:n,
              7:n,
              7:n,
              8:n,
              9:n,
              10:n,
              11:n,
              12:n,
              7:n,
              13:n,
              14:n}

```

1:wf..... NILNIL

⊢ (Order(T;x,y.R(x,y)) & Connex(T;x,y.R(x,y))) ∈ ℙ

2:wf..... NILNIL

⊢ (Order(T;x,y.R'(x,y)) & Connex(T;x,y.R'(x,y))) ∈ ℙ

3:wf..... NILNIL

⊢ Order(T;x,y.R(x,y)) ∈ ℙ

4:wf..... NILNIL

$\vdash \text{Order}(T; x, y. R'(x, y)) \in \mathbb{P}$
5:wf..... NILNIL

$\vdash \text{Connex}(T; x, y. R(x, y)) \in \mathbb{P}$
6:wf..... NILNIL

$\vdash \text{Connex}(T; x, y. R'(x, y)) \in \mathbb{P}$
7:wf..... NILNIL

$\vdash T \in \text{Type}$
8:wf..... NILNIL

$\vdash (\lambda x, y. R(x, y)) \in T \rightarrow T \rightarrow \mathbb{P}$
9:wf..... NILNIL

$\vdash (\lambda x, y. R'(x, y)) \in T \rightarrow T \rightarrow \mathbb{P}$
10:wf..... NILNIL

5. $x : T$
6. T
 $\vdash x \in T$
11:wf..... NILNIL

5. T
6. $y : T$
 $\vdash y \in T$
12:wf..... NILNIL

5. T
 $\vdash T \in \text{Type}$
13:wf..... NILNIL

$\vdash (\text{Order}(T; x, y. R'(x, y)) \ \& \ \text{Connex}(T; x, y. R'(x, y)))$
 $=$
 $(\text{Order}(T; x, y. R'(x, y)) \ \& \ \text{Connex}(T; x, y. R'(x, y)))$
14:

$\vdash (\text{Order}(T; x, y. R'(x, y)) \ \& \ \text{Connex}(T; x, y. R'(x, y)))$
 $\iff (\text{Order}(T; x, y. R'(x, y)) \ \& \ \text{Connex}(T; x, y. R'(x, y)))$
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