Inference at $*$ 1
of proof for Lemma order_split:

1. T : Type
2. R : $T \to T \to \mathbb{P}$
3. $\forall a{:}T.\ R(a,a)$
4. $\forall a, b, c{:}T.\ R(a,b) \Rightarrow R(b,c) \Rightarrow R(a,c)$
5. $\forall x, y{:}T.\ R(x,y) \Rightarrow R(y,x) \Rightarrow (x = y)$
6. $\forall x, y{:}T.\ \mathrm{Dec}(x = y)$
7. a : T
8. b : T
9. $R(a,b)$

$\vdash (R(a,b)\ \&\ (\neg R(b,a))) \vee (a = b)$
by ((Decide $a = b$)
CollapseTHENA ((Auto_aux (first_nat 1:n) ((first_nat 1:n
),(first_nat 4:n)) (first_tok :t) inil_term)))·

1:

10. $a = b$

$\vdash (R(a,b)\ \&\ (\neg R(b,a))) \vee (a = b)$

2:

10. $\neg(a = b)$

$\vdash (R(a,b)\ \&\ (\neg R(b,a))) \vee (a = b)$

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http://www.nuprl.org/FDLcontent/p0_942988_/p121_79783_{order_split}1.html