Inference at $*$
of proof for Lemma dec_iff_ex_bvfun:

$\vdash \forall T$:Type, E:($T \to T \to \mathbb{P}$).
($\forall x$, y:T. Dec($E(x,y)$)) $\iff$ ($\exists f$:$T \to T \to \mathbb{B}$. ($\forall x$, y:T. ($\uparrow(x\ f\ y)$) $\iff$ $E(x,y)$))
by ((((Unfolds "infix_ap so_apply" 0)
CollapseTHENM (GenRepD))$\cdot$)
CollapseTHENA (
(Auto_aux (first_nat 1:n) ((first_nat 1:n),(first_nat 3:n)) (first_tok :t) inil_term)))$\cdot$

1:

1. T : Type
2. E : $T \to T \to \mathbb{P}$
3. $\forall x$, y:T. Dec($E(x,y)$)
$\vdash$ $\exists f$:$T \to T \to \mathbb{B}$. ($\forall x$, y:T. ($\uparrow(f(x,y))$) $\iff$ ($E(x,y)$))

2:

1. T : Type
2. E : $T \to T \to \mathbb{P}$
3. $\exists f$:$T \to T \to \mathbb{B}$. ($\forall x$, y:T. ($\uparrow(f(x,y))$) $\iff$ ($E(x,y)$))
4. x : T
5. y : T
$\vdash$ Dec($E(x,y)$)

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