hnil_def THM

```
⊢  ∀'a:S. equal(nil,abs_list(pair((λn:hnum. select(λe:'a. t)),0)))
| by HN THEN StrongAuto THEN Try (Complete (Unfold `label` 0))
|
1. 'a : S
⊢  nil = abs_list(<λn:hnum. @be:'a. true2,0>)
| by Inst
|    Thm* ∀'a,'b:S, P:('b→𝔹), rep:('a→'b), abs:('b→'a), a:'a, r:'b.
|         iso_pair('a;'b;P;rep;abs) ⇒ rep(a) = r ⇒ a = abs(r)
|    {iso_pair_rep_to_abs}
|    ['a List
|    ;(ℕ→'a)×ℕ
|    ;is_list_rep
|    ;rep_list
|    ;abs_list
|    ;nil
|    ;<λn:ℕ. @be:'a. true2,0>]
|    THEN
|    StrongAuto
|    THEN
|    Try (Complete (Unfold `label` 0))
|
|\
| .....antecedent .....
| 1. 'a : S
| ⊢  iso_pair('a List;(ℕ→'a)×ℕ;is_list_rep;rep_list;abs_list)
|   by L
|      Thm* ∀'a:S.
|           iso_pair('a List;(ℕ→'a)×ℕ;is_list_rep;rep_list;abs_list)
|      {list_iso}
|      THEN
|      StrongAuto
|      THEN
|      Try (Complete (Unfold `label` 0))
|
.\
. .....antecedent .....
. 1. 'a : S
. ⊢  rep_list(nil) = <λn:ℕ. @be:'a. true2,0>
. | by Unab [`hrep_list`;`rep_list`] THEN Simp THEN StrongAuto
. |    THEN
. |    Try (Complete (Unfold `label` 0))
. |
. 1. 'a : S
. ⊢  <λn:ℕ. if n<20 then nil[n] else arb('a) fi ,0>
. |  =
. |  <λn:ℕ. @be:'a. true2,0>
. | by Analyze THEN StrongAuto THEN Try (Complete (Unfold `label` 0))
. |
. .....subterm .....
. 1. 'a : S
. ⊢  (λn:ℕ. if n<20 then nil[n] else arb('a) fi )
. |  =
. |  (λn:ℕ. @be:'a. true2)
```

```
. | by Analyze THEN StrongAuto THEN Try (Complete (Unfold `label` 0))
. |
. .....subterm .....
. 1. 'a : S
. 2. n : ℕ
. ⊢  if n<₂0 then nil[n] else arb('a) fi  = (@_b e:'a. true₂)
. | by BifCase THEN Simp THEN StrongAuto
. |
. 1. 'a : S
. 2. n : ℕ
. 3. ¬n<0
. ⊢  arb('a) = (@_b e:'a. true₂)
.   by Inst Thm* ∀'a:S. equal(arb,select(λx:'a. t))    {harb_wd} []
.      THEN
.      HN
.      THEN
.      StrongAuto
.      THEN
.      Try (Complete (Unfold `label` 0))
.      THEN
.      Last BackThru
.      THEN
.      StrongAuto
.      THEN
.      Try (Complete (Unfold `label` 0))
END
```