```
map_select  THM

⊢  ∀f:(A→B), as:A List, n:ℕ||as||. map(f;as)[n] = f(as[n])
| by UnivCD
|
1. A : Type
2. B : Type
3. f : A→B
4. as : A List
5. n : ℕ||as||
⊢  map(f;as)[n] = f(as[n])
| by ListInd 4 THEN AbReduce 0 THEN Analyze 0
|
|\
| 5. n : ℕ0
| ⊢  nil[n] = f(nil[n])  by Auto
|
.\
. 5. u : A
. 6. v : A List
. 7. ∀n:ℕ||v||. map(f;v)[n] = f(v[n])
. 8. n : ℕ(||v||+1)
. ⊢  (f(u).map(f;v))[n] = f((u.v)[n])  by Decide (n = 0)
. |
. |\
. | 9. n = 0
. | ⊢  (f(u).map(f;v))[n] = f((u.v)[n])
. |   by RWH
. |      (LemmaC
. |       Thm* ∀a:T, as:T List, i:ℤ. i≤0 ⇒ (a.as)[i] = a
. |       {select_cons_hd})
. |      0
. |
. .\
. . 9. ¬n = 0
. . ⊢  (f(u).map(f;v))[n] = f((u.v)[n])
. .   by (RWH
. .       (LemmaC
. .        Thm* ∀a:T, as:T List, i:ℤ.
. .             0<i ⇒ i≤||as|| ⇒ (a.as)[i] = as[(i-1)]
. .        {select_cons_tl})
. .       0)
. .      THEN
. .      (BackThru 7)
END
```