```
reach_dec  THM

⊢  ∀Auto:Automata(Alph;St).
|  Fin(Alph) ⇒ Fin(St) ⇒ (∀s:St. Dec(∃w:Alph*. (Result(Auto)w) = s))
| by RepD
|
1. Alph : Type
2. St : Type
3. Auto : Automata(Alph;St)
4. Fin(Alph)
5. Fin(St)
6. s : St
⊢  Dec(∃w:Alph*. (Result(Auto)w) = s)
| by Inst
|     Thm* ∀Auto:Automata(Alph;St).
|          Fin(St) & Fin(Alph) ⇒
|          (∃RL:St*.
|           ∀s:St. (∃w:Alph*. (Result(Auto)w) = s) ⟺ mem_f(St;s;RL))
|     {reach_list}
|     [Alph;St;Auto]
|
7. ∃RL:St*. ∀s:St. (∃w:Alph*. (Result(Auto)w) = s) ⟺ mem_f(St;s;RL)
⊢   by Analyze -1 THEN RWH (HypC -1) 0
|
7. RL : St*
8. ∀s:St. (∃w:Alph*. (Result(Auto)w) = s) ⟺ mem_f(St;s;RL)
⊢  Dec(mem_f(St;s;RL))
  by BackThru
     Thm* ∀s:S, l:S*. Fin(S) ⇒ Dec(mem_f(S;s;l))    {mem_f_dec}
END
```