```
inverse-biject  THM

⊢  ∀A,B:Type, f:(A→B).
|  Bij(A; B; f) ⇒ (∃g:(B→A). Bij(B; A; g) & InvFuns(A; B; f; g))
| by Auto
|    THEN
|    (AllHyps
|     (λh.
|      FwdThru
|      Thm* ∀f:(A→B).
|            Bij(A; B; f) ⇒ (∃g:(B→A). InvFuns(A; B; f; g))
|      {bij_imp_exists_inv}
|      [h]))
|    THEN
|    ExRepD
|    THEN
|    (AllHyps
|     (λh.
|      FwdThru
|      Thm* ∀f:(A→B), g:(B→A).
|            InvFuns(A; B; f; g) ⇒ InvFuns(B; A; g; f)
|      {inv_funs_sym}
|      [h]))
|
1. A : Type
2. B : Type
3. f : A→B
4. Bij(A; B; f)
5. g : B→A
6. InvFuns(A; B; f; g)
7. InvFuns(B; A; g; f)
⊢  ∃g:(B→A). Bij(B; A; g) & InvFuns(A; B; f; g)  by InstConcl [g]
|
1. A : Type
2. B : Type
3. f : A→B
4. Bij(A; B; f)
5. g : B→A
6. InvFuns(A; B; f; g)
7. InvFuns(B; A; g; f)
⊢  Bij(B; A; g)
  by Inst
     Thm* ∀f:(A→B), g:(B→A). InvFuns(A; B; f; g) ⇒ Bij(A; B; f)
     {fun_with_inv_is_bij}
     [B;A;g;f]
END
```