```
sfa_doc_bool_vs_decidable_fun  THM

⊢  ∀A:Type, P:(A→Prop).
|  (∀x:A. Dec(P(x))) ⇒ (∃f:(A→𝔹). ∀x:A. P(x) ⟺ f(x))  by Auto
|
1. A : Type
2. P : A→Prop
3. ∀x:A. Dec(P(x))
⊢  ∃f:(A→𝔹). ∀x:A. P(x) ⟺ f(x)
| by Inst:
|    Thm* ∀Q:(A→B→Prop).
|          (∀x:A. ∃y:B. Q(x,y)) ⇒ (∃f:(A→B). ∀x:A. Q(x,f(x)))
|    {ax_choice}
|    Using:[B:= 𝔹 | Q(x,b):= P(x) ⟺ b]
|
4. x : A
⊢  ∃y:𝔹. P(x) ⟺ y
  by BackThru:
     Thm* Dec(P) ⟺ (∃b:𝔹. P ⟺ b)    {sfa_doc_bool_vs_decidable}
END
```