```
diagonalization_wrt_eq  THM

⊢  ∀B:Type, e:(B→B).
|  (∀b:B. ¬e(b) = b)
|  ⇒
|  (∀A:Type, f:(A→A→B). ¬(∃a:A. (Diag f wrt x. e(x)) = f(a)))
| by Thm*  ∀R:(B→B→Prop), e:(B→B).
|          (∀b:B. ¬R(e(b),b))
|          ⇒
|          (∀A:Type, f:(A→A→B).
|           ¬(∃a:A. R((Diag f wrt x. e(x))(a),f(a,a))))
|    {diagonalization} ;
|    Auto
|
1. B : Type
2. e : B→B
3. ∀b:B. ¬e(b) = b
4. A : Type
5. f : A→A→B
⊢  ¬(∃a:A. (Diag f wrt x. e(x)) = f(a))
| by Inst:
|    Thm*  ∀R:(B→B→Prop), e:(B→B).
|          (∀b:B. ¬R(e(b),b))
|          ⇒
|          (∀A:Type, f:(A→A→B).
|           ¬(∃a:A. R((Diag f wrt x. e(x))(a),f(a,a))))
|    {diagonalization}
|    Using:[B | R(x,y):= x = y ∈ B | e | A | f]
|
6. ¬(∃a:A. (Diag f wrt x. e(x))(a) = f(a,a))
⊢  ¬(∃a:A. (Diag f wrt x. e(x)) = f(a))  by SimilarTo: Hyp:-1
|
6. a : A
7. (Diag f wrt x. e(x)) = f(a)
⊢  (Diag f wrt x. e(x))(a) = f(a,a)  by Analyze
END
```