```
remove_is_member  THM

⊢  ∀eq:{T≡_2}, x,y:T, L:T List. x(∈eq) remove(eq;y;L) ⇒ x(∈eq) L
| by UnivCD
|
1. T : Type
2. eq : {T≡_2}
3. x : T
4. y : T
5. L : T List
6. x(∈eq) remove(eq;y;L)
⊢  x(∈eq) L  by ListInd -2 THENL [AbReduce 0;Analyze 0]
|
6. u : T
7. v : T List
8. x(∈eq) remove(eq;y;v) ⇒ x(∈eq) v
9. x(∈eq) remove(eq;y;(u.v))
⊢  x(∈eq) (u.v)  by AbReduce 0 THEN IfThenElseCases 0
|
|\
| .....truecase .....
| 10. eq(x,u) = true_2
| ⊢  true_2
|   by BackThru Thm* ∀P:𝔹. P ⟺ P = true_2    {assert_iff_btrue}
|
.\
. .....falsecase .....
. 10. eq(x,u) = false_2
. ⊢  x(∈eq) v  by AbReduce -2 THEN IfThenElseCases -2
. |
. |\
. | .....truecase .....
. | 9. eq(y,u) = true_2
. | 10. x(∈eq) v
. | 11. eq(x,u) = false_2
. | ⊢  x(∈eq) v  by Trivial
. |
. .\
. . .....falsecase .....
. . 9. eq(y,u) = false_2
. . 10. x(∈eq) (u.remove(eq;y;v))
. . 11. eq(x,u) = false_2
. . ⊢  x(∈eq) v  by AbReduce -2 THEN IfThenElseCases -2
. . |
. . |\
. . | .....truecase .....
. . | 10. eq(x,u) = true_2
. . | 11. true_2
. . | 12. eq(x,u) = false_2
. . | ⊢  x(∈eq) v  by HypSubst -3 -1
. . | |
. . | 12. true_2 = false_2
. . | ⊢  x(∈eq) v
. . |   by ApFunToHypEquands ‘z’ if z→ 0 else 1 fi ℤ -1
. . |      THEN
```

```
. . |       Reduce -1
. . |
. . .\
. . . .....falsecase .....
. . . 10. eq(x,u) = false₂
. . . 11. x(∈eq) remove(eq;y;v)
. . . 12. eq(x,u) = false₂
. . . ⊢  x(∈eq) v  by HypBackchain
END
```