```
decidable_vs_unique_nsub2  THM

⊢  Dec(P) ⟺ (∃!i:ℕ2. if i=₂0→ P else ¬P fi)  by UnivCD
|
1. P : Prop
⊢  Dec(P) ⟺ (∃!i:ℕ2. if i=₂0→ P else ¬P fi)  by GenUnivCD
|
|\
| 2. Dec(P)
| ⊢  ∃!i:ℕ2. if i=₂0→ P else ¬P fi  by Analyze-1
| |
| |\
| | 2. P
| | ⊢  ∃!i:ℕ2. if i=₂0→ P else ¬P fi  by Witness: 0
| | |
| | ⊢  0 is the i:ℕ2. if i=₂0→ P else ¬P fi  by Analyze
| | |
| | |\
| | | ⊢  if 0=₂0→ P else ¬P fi  by Reduce Concl
| | |
| | .\
| | . ⊢  ∀i:ℕ2. if i=₂0→ P else ¬P fi ⇒ i = 0 ∈ ℕ2
| | .   by Auto THEN SplitITE Hyp:-1
| |
| .\
| . 2. ¬P
| . ⊢  ∃!i:ℕ2. if i=₂0→ P else ¬P fi  by Witness: 1 THEN Analyze
| . |
| . |\
| . | ⊢  if 1=₂0→ P else ¬P fi  by Reduce Concl
| . |
| . .\
| . . ⊢  ∀i:ℕ2. if i=₂0→ P else ¬P fi ⇒ i = 1 ∈ ℕ2  by Auto
| . . |
| . . 3. i : ℕ2
| . . 4. if i=₂0→ P else ¬P fi
| . . ⊢  i = 1 ∈ ℕ2  by SplitITE Hyp:-1
|
.\
. 2. ∃!i:ℕ2. if i=₂0→ P else ¬P fi
. ⊢  Dec(P)  by Analyze-1 THEN Analyze-1
. |
. 2. i : ℕ2
. 3. if i=₂0→ P else ¬P fi
. ⊢  Dec(P)  by SplitITE Hyp:-1
. |
. |\
. | .....truecase .....
. | 3. P
. | 4. i = 0
. | ⊢  Dec(P)  by Select: 1
. |
. .\
. . .....falsecase .....
. . 3. ¬P
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. . 4. i ≠ 0
. . ⊢  Dec(P)  by Select: 2
END
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