```
not_dec_is_dec  THM

⊢  ∀P:(A→Prop).
|  (∀x:A. P(x) ∨ ¬P(x)) & (∃x:A. ¬P(x)) ∨ ¬(∃x:A. ¬P(x)) ⇒
|  (∀x:A. P(x)) ∨ ¬(∀x:A. P(x))  by UnivCD
|
1. A : Type
2. P : A→Prop
3. (∀x:A. P(x) ∨ ¬P(x)) & (∃x:A. ¬P(x)) ∨ ¬(∃x:A. ¬P(x))
⊢  (∀x:A. P(x)) ∨ ¬(∀x:A. P(x))  by Analyze 3
|
3. ∀x:A. P(x) ∨ ¬P(x)
4. (∃x:A. ¬P(x)) ∨ ¬(∃x:A. ¬P(x))
⊢   by Analyze 4
|
|\
| 4. ∃x:A. ¬P(x)
| ⊢   by Sel 2 (Analyze 0)
| |
| ⊢  ¬(∀x:A. P(x))  by Analyze 0
| |
| 5. ∀x:A. P(x)
| ⊢  False  by Analyze 4
| |
| 4. x : A
| 5. ¬P(x)
| 6. ∀x:A. P(x)
| ⊢   by Analyze 5
| |
| 5. ∀x:A. P(x)
| ⊢  P(x)  by Witness5 x
|
.\
. 4. ¬(∃x:A. ¬P(x))
. ⊢   by Sel 1 (Analyze 0)
. |
. ⊢  ∀x:A. P(x)  by Analyze 0
. |
. 5. x : A
. ⊢  P(x)  by InstHyp [x] 3
. |
. 6. P(x) ∨ ¬P(x)
. ⊢   by Analyze 6
. |
. |\
. | 6. P(x)
. | ⊢   by Auto
. |
. .\
. . 6. ¬P(x)
. . ⊢   by Analyze 4
. . |
. . 4. x : A
. . 5. ¬P(x)
. . ⊢  ∃x:A. ¬P(x)  by Witness x
```

```
END
```