```
or_via_exist_intseg_notnull  THM

⊢  ∀a,b:ℤ, P:({a..b⁻}→Prop).
|  a<b
|  ⇒
|  (∀c:ℤ.
|   b = c+1 ⇒ ((∃i:{a..b⁻}. P(i)) ⟺ (∃i:{a..c⁻}. P(i)) ∨ P(c)))
| by UnivCD
|
1. a : ℤ
2. b : ℤ
3. P : {a..b⁻}→Prop
4. a<b
5. c : ℤ
6. b = c+1
⊢  (∃i:{a..b⁻}. P(i)) ⟺ (∃i:{a..c⁻}. P(i)) ∨ P(c)  by Auto
|
|\
| 7. ∃i:{a..b⁻}. P(i)
| ⊢  (∃i:{a..c⁻}. P(i)) ∨ P(c)  by Analyze-1
| |
| 7. i : {a..b⁻}
| 8. P(i)
| ⊢  (∃i:{a..c⁻}. P(i)) ∨ P(c)  by SimilarTo: i<c ∨ i = c ∈ ℤ
| |
| |\
| | 9. i<c
| | ⊢  ∃i:{a..c⁻}. P(i)  by Witness: i
| |
| .\
| . 9. i = c
| . ⊢  P(c)  by Rewrite by i = c ∈ {a..b⁻}
|
.\
. 7. (∃i:{a..c⁻}. P(i)) ∨ P(c)
. ⊢  ∃i:{a..b⁻}. P(i)  by Analyze-1
. |
. |\
. | 7. ∃i:{a..c⁻}. P(i)
. | ⊢  ∃i:{a..b⁻}. P(i)  by SimilarTo: Hyp:-1
. |
. .\
. . 7. P(c)
. . ⊢  ∃i:{a..b⁻}. P(i)  by Witness: c
END
```