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split_int_seg_exist_dom_sfa  THM

⊢  ∀i,j:ℤ.
|  i<j
|  ⇒
|  (∀F:({i..j⁻}→Prop).
|   (∃k:{i..j⁻}. F(k)) ⟺ F(i) ∨ (∃k:{(i+1)..j⁻}. F(k)))  by UnivCD
|
1. i : ℤ
2. j : ℤ
3. i<j
4. F : {i..j⁻}→Prop
⊢  (∃k:{i..j⁻}. F(k)) ⟺ F(i) ∨ (∃k:{(i+1)..j⁻}. F(k))  by Auto
|
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| 5. ∃k:{i..j⁻}. F(k)
| ⊢  F(i) ∨ (∃k:{(i+1)..j⁻}. F(k))  by Analyze-1
| |
| 5. k : {i..j⁻}
| 6. F(k)
| ⊢  F(i) ∨ (∃k:{(i+1)..j⁻}. F(k))  by Decide: i = k ∈ ℤ
| |
| |\
| | 7. i = k
| | ⊢  F(i) ∨ (∃k:{(i+1)..j⁻}. F(k))
| |   by Select: 1 THEN Rewrite by i = k ∈ {i..j⁻}
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| .\
| . 7. ¬i = k
| . ⊢  F(i) ∨ (∃k:{(i+1)..j⁻}. F(k))  by Select: 2 THEN Witness: k
|
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. 5. F(i) ∨ (∃k:{(i+1)..j⁻}. F(k))
. ⊢  ∃k:{i..j⁻}. F(k)  by Analyze-1
. |
. |\
. | 5. F(i)
. | ⊢  ∃k:{i..j⁻}. F(k)  by Witness: i
. |
. .\
. . 5. ∃k:{(i+1)..j⁻}. F(k)
. . ⊢  ∃k:{i..j⁻}. F(k)  by SimilarTo: Hyp:-1
END
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