```
formula_and_left_sat  THM

⊢  ∀concl,M,N:Formula List, q,r:Formula, a:Assignment.
|  a |= <[q; r/ M @ N],concl> ⟺ a |= <M @ (q⌈∧⌉r.N),concl>
| by UnivCD THEN Analyze 0 THEN Analyze 0
|
|\
| 1. concl : Formula List
| 2. M : Formula List
| 3. N : Formula List
| 4. q : Formula
| 5. r : Formula
| 6. a : Assignment
| 7. a |= <[q; r/ M @ N],concl>
| ⊢  a |= <M @ (q⌈∧⌉r.N),concl>
| | by OnHyps [-1;0]
| |    (λi.
| |     UnfoldTopAb i THEN AbReduce i
| |     THEN
| |     Rewrite
| |     (HigherC
| |      (LemmaC
| |       Thm* ∀P:(T→Prop), L,M:T List.
| |            ∃x∈(L @ M).P(x) ⟺ ∃x∈L.P(x) ∨ ∃x∈M.P(x)
| |       {list_exists_append_lemma}))
| |     i
| |     THEN
| |     AbReduce i)
| |
| 7. a |≠ q ∨ a |≠ r ∨ ∃F∈M.a |≠ F ∨ ∃F∈N.a |≠ F ∨ ∃F∈concl.a |= F
| ⊢  ∃F∈M.a |≠ F ∨ a |≠ q⌈∧⌉r ∨ ∃F∈N.a |≠ F ∨ ∃F∈concl.a |= F
| | by Rewrite
| |    (HigherC
| |     (LemmaC
| |      Thm* ∀a:Assignment, q,r:Formula.
| |           a |≠ q⌈∧⌉r ⟺ a |≠ q ∨ a |≠ r
| |      {formula_and_falsifiable_lemma}))
| |    0
| |
| ⊢  ∃F∈M.a |≠ F ∨ a |≠ q ∨ a |≠ r ∨ ∃F∈N.a |≠ F ∨ ∃F∈concl.a |= F
| | by Analyze -1
| |
| |\
| | 7. a |≠ q ∨ a |≠ r ∨ ∃F∈M.a |≠ F ∨ ∃F∈N.a |≠ F
| | ⊢   by Analyze -1
| | |
| | |\
| | | 7. a |≠ q
| | | ⊢   by Choose [1;2;1;1] THEN Trivial
| | |
| | .\
| | . 7. a |≠ r ∨ ∃F∈M.a |≠ F ∨ ∃F∈N.a |≠ F
| | . ⊢   by Analyze -1
| | . |
| | . |\
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| | . | 7. a |≠ r
| | . | ⊢   by Choose [1;2;1;2] THEN Trivial
| | . |
| | . .\
| | . . 7. ∃F∈M.a |≠ F ∨ ∃F∈N.a |≠ F
| | . . ⊢   by Analyze -1
| | . . |
| | . . |\
| | . . | 7. ∃F∈M.a |≠ F
| | . . | ⊢   by Choose [1;1] THEN Trivial
| | . . |
| | . . .\
| | . . . 7. ∃F∈N.a |≠ F
| | . . . ⊢   by Choose [1;2;2] THEN Trivial
| |
| .\
| . 7. ∃F∈concl.a |= F
| . ⊢   by Choose [2] THEN Trivial
|
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. 1. concl : Formula List
. 2. M : Formula List
. 3. N : Formula List
. 4. q : Formula
. 5. r : Formula
. 6. a : Assignment
. 7. a |= <M @ (q⌈∧⌉r.N),concl>
. ⊢  a |= <[q; r/ M @ N],concl>
. | by OnHyps [-1;0]
. |    (λi.
. |     UnfoldTopAb i THEN AbReduce i
. |     THEN
. |     Rewrite
. |     (HigherC
. |      (LemmaC
. |       Thm* ∀P:(T→Prop), L,M:T List.
. |            ∃x∈(L @ M).P(x) ⟺ ∃x∈L.P(x) ∨ ∃x∈M.P(x)
. |       {list_exists_append_lemma}))
. |     i
. |     THEN
. |     AbReduce i)
. |
. 7. ∃F∈M.a |≠ F ∨ a |≠ q⌈∧⌉r ∨ ∃F∈N.a |≠ F ∨ ∃F∈concl.a |= F
. ⊢  a |≠ q ∨ a |≠ r ∨ ∃F∈M.a |≠ F ∨ ∃F∈N.a |≠ F ∨ ∃F∈concl.a |= F
. | by Analyze -1
. |
. |\
. | 7. ∃F∈M.a |≠ F ∨ a |≠ q⌈∧⌉r ∨ ∃F∈N.a |≠ F
. | ⊢   by Analyze -1
. | |
. | |\
. | | 7. ∃F∈M.a |≠ F
. | | ⊢   by Choose [1;2;2;1] THEN Trivial
. | |
. | .\
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. | . 7. a |≠ q⌜∧⌝r ∨ ∃F∈N.a |≠ F
. | . ⊢   by Analyze -1
. | . |
. | . |\
. | . | 7. a |≠ q⌜∧⌝r
. | . | ⊢
. | . | | by FwdThru
. | . | |    Thm* ∀a:Assignment, q,r:Formula.
. | . | |         a |≠ q⌜∧⌝r ⟺ a |≠ q ∨ a |≠ r
. | . | |    {formula_and_falsifiable_lemma}
. | . | |    [-1]
. | . | |
. | . | 8. a |≠ q ∨ a |≠ r
. | . | ⊢   by Analyze -1
. | . | |
. | . | |\
. | . | | 8. a |≠ q
. | . | | ⊢   by Choose [1;1] THEN Trivial
. | . | |
. | . | .\
. | . | . 8. a |≠ r
. | . | . ⊢   by Choose [1;2;1] THEN Trivial
. | . |
. | . .\
. | . . 7. ∃F∈N.a |≠ F
. | . . ⊢   by Choose [1;2;2;2] THEN Trivial
. |
. .\
. . 7. ∃F∈concl.a |= F
. . ⊢   by Choose [2] THEN Trivial
END
```