```
formula_and_right_falsifiable  THM

⊢  ∀hyp,M,N:Formula List, q,r:Formula, a:Assignment.
|  a |≠ <hyp,q.(M @ N)> ∨ a |≠ <hyp,r.(M @ N)>
|  ⟺
|  a |≠ <hyp,M @ (q⌈∧⌉r.N)>  by UnivCD
|
1. hyp : Formula List
2. M : Formula List
3. N : Formula List
4. q : Formula
5. r : Formula
6. a : Assignment
⊢  a |≠ <hyp,q.(M @ N)> ∨ a |≠ <hyp,r.(M @ N)>
|  ⟺
|  a |≠ <hyp,M @ (q⌈∧⌉r.N)>
| by Rewrite
|    (UnfoldC `sequent_falsifiable` THENC AbReduceC
|     THENC
|     HigherC
|     (LemmaC
|      Thm* ∀P:(T→Prop), L,M:T List.
|           ∀x∈(L @ M).P(x) ⟺ ∀x∈L.P(x) & ∀x∈M.P(x)
|      {list_all_append_lemma})
|     THENC
|     AbReduceC
|     THENC
|     HigherC
|     (LemmaC
|      Thm* ∀a:Assignment, q,r:Formula. a |≠ q⌈∧⌉r ⟺ a |≠ q ∨ a |≠ r
|      {formula_and_falsifiable_lemma}))
|    0
|
⊢  ∀F∈hyp.a |= F  & a |≠ q & ∀F∈M.a |≠ F & ∀F∈N.a |≠ F
|  ∨ ∀F∈hyp.a |= F  & a |≠ r & ∀F∈M.a |≠ F & ∀F∈N.a |≠ F
|  ⟺
|  ∀F∈hyp.a |= F  & ∀F∈M.a |≠ F & a |≠ q ∨ a |≠ r & ∀F∈N.a |≠ F
| by Repeat (Analyze 0) THEN Analyze -1 THEN RepeatAndHD -1
|    THEN
|    Try Trivial
|
|\
| 7. ∀F∈hyp.a |= F
| 8. a |≠ q
| 9. ∀F∈M.a |≠ F
| 10. ∀F∈N.a |≠ F
| ⊢  a |≠ q ∨ a |≠ r  by Choose [1]
|
|\
| 7. ∀F∈hyp.a |= F
| 8. a |≠ r
| 9. ∀F∈M.a |≠ F
| 10. ∀F∈N.a |≠ F
| ⊢  a |≠ q ∨ a |≠ r  by Choose [2]
|
```

```
.\
. 7. ∀F∈hyp.a |= F
. 8. ∀F∈M.a |≠ F
. 9. a |≠ q ∨ a |≠ r
. 10. ∀F∈N.a |≠ F
. ⊢  ∀F∈hyp.a |= F  & a |≠ q & ∀F∈M.a |≠ F & ∀F∈N.a |≠ F
. |  ∨ ∀F∈hyp.a |= F  & a |≠ r & ∀F∈M.a |≠ F & ∀F∈N.a |≠ F
. | by Analyze -2
. |
. |\
. | 9. a |≠ q
. | 10. ∀F∈N.a |≠ F
. | ⊢   by Choose [1]
. |
. .\
. . 9. a |≠ r
. . 10. ∀F∈N.a |≠ F
. . ⊢   by Choose [2]
END
```