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list_rank_wf  THM

⊢  ρ ∈ (Formula List)→ℕ  by Ext
|
|\
| .....wf .....
| ⊢   by Unfold ‘list_rank‘ 0 THEN MemberEqCD
| |
| 1. L : Formula List
| ⊢  reduce(λx,y. ρ(x)+y;0;L) ∈ ℕ  by ListInd 1
| |
| |\
| | ⊢  reduce(λx,y. ρ(x)+y;0;nil) ∈ ℕ  by Reduce 0
| |
| .\
| . 2. u : Formula
| . 3. v : Formula List
| . 4. reduce(λx,y. ρ(x)+y;0;v) ∈ ℕ
| . ⊢  reduce(λx,y. ρ(x)+y;0;u.v) ∈ ℕ  by Reduce 0
| . |
| . ⊢  ρ(u)+reduce(λx,y. ρ(x)+y;0;v) ∈ ℕ
| . | by GenConcl (reduce(λx,y. ρ(x)+y;0;v) = n)
| . |
| . 5. n : ℕ
| . 6. reduce(λx,y. ρ(x)+y;0;v) = n
| . ⊢  ρ(u)+n ∈ ℕ  by GenConclOnAps
|
|\
| 1. x : Formula List
| ⊢  ρ(x) ∈ ℕ  by ListInd 1
| |
| |\
| | ⊢  ρ(nil) ∈ ℕ  by AbReduce 0
| | |
| | ⊢  0 ∈ ℕ  by Auto
| |
| .\
| . 2. u : Formula
| . 3. v : Formula List
| . 4. ρ(v) ∈ ℕ
| . ⊢  ρ(u.v) ∈ ℕ  by AbReduce 0
| . |
| . ⊢  ρ(u)+ρ(v) ∈ ℕ  by GenConclOnAps
|
.\
. .....wf .....
. ⊢  Formula List ∈ Type  by Auto
END
```