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discrete__Formula  THM

⊢  Discrete{Formula}  by UnfoldTopAb 0 THEN Analyze 0
|
1. x : Formula
⊢  ∀y:Formula. Dec(x = y)  by FormulaElimination 1
|
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| 1. Q : Formula→Prop
| 2. ∀x:{x:Formula| Q(x) }, y:Formula. Dec(x = y)
| 3. x1 : Var
| ⊢  ∀y:Formula. Dec(⌈x1⌉ = y)  by Analyze 0
| |
| 4. y : Formula
| ⊢  Dec(⌈x1⌉ = y)
| | by let Solver ≡ FalseCase THEN FormulaEquality -1 in
| |    FormulaCases -1 THENL [Id;Solver;Solver;Solver;Solver]
| |
| 5. x : Var
| ⊢  Dec(⌈x1⌉ = ⌈x⌉)  by Decide (x1 = x)
| |
| |\
| | 6. x1 = x
| | ⊢  Dec(⌈x1⌉ = ⌈x⌉)  by HypSubst -1 0
| | |
| | ⊢  Dec(⌈x⌉ = ⌈x⌉)  by TrueCase
| |
| .\
| . 6. ¬x1 = x
| . ⊢  Dec(⌈x1⌉ = ⌈x⌉)  by FalseCase THEN Analyze -2
| . |
| . 6. ⌈x1⌉ = ⌈x⌉
| . ⊢  x1 = x  by FormulaEquality -1
|
|\
| 1. Q : Formula→Prop
| 2. ∀x:{x:Formula| Q(x) }, y:Formula. Dec(x = y)
| 3. x : Formula
| 4. Q(x)  [not for witness]
| ⊢  ∀y@0:Formula. Dec(⌈◇⌉x = y@0)  by Analyze 0
| |
| 5. y@0 : Formula
| ⊢  Dec(⌈◇⌉x = y@0)
| | by let Solver ≡ FalseCase THEN FormulaEquality -1 in
| |    FormulaCases -1 THENL [Solver;Id;Solver;Solver;Solver]
| |
| 6. x1 : Formula
| ⊢  Dec(⌈◇⌉x = ⌈◇⌉x1)  by Decide (x = x1)
| |
| |\
| | 7. x = x1
| | ⊢  Dec(⌈◇⌉x = ⌈◇⌉x1)  by TrueCase THEN FormulaEquality 0
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| . 7. ¬x = x1
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| . ⊢  Dec(⌈◇⌉x = ⌈◇⌉x1)  by FalseCase THEN Analyze -2
| . |
| . 4. Q(x)
| . 5. Formula
| . 6. x1 : Formula
| . 7. ⌈◇⌉x = ⌈◇⌉x1
| . ⊢  x = x1  by FormulaEquality -1
|
|\
| 1. Q : Formula→Prop
| 2. ∀x:{x:Formula| Q(x) }, y:Formula. Dec(x = y)
| 3. x1 : {x:Formula| Q(x) }
| 4. x2 : Formula
| 5. Q(x2)  [not for witness]
| ⊢  ∀y@0:Formula. Dec(x1⌈∧⌉x2 = y@0)  by Analyze 0
| |
| 6. y@0 : Formula
| ⊢  Dec(x1⌈∧⌉x2 = y@0)
| | by let Solver ≡ FalseCase THEN FormulaEquality -1 in
| |    FormulaCases -1 THENL [Solver;Solver;Id;Solver;Solver]
| |
| 7. x3 : Formula
| 8. x4 : Formula
| ⊢  Dec(x1⌈∧⌉x2 = x3⌈∧⌉x4)  by Decide (x1 = x3)
| |
| |\
| | 9. x1 = x3
| | ⊢  Dec(x1⌈∧⌉x2 = x3⌈∧⌉x4)  by Decide (x2 = x4)
| | |
| | |\
| | | 10. x2 = x4
| | | ⊢  Dec(x1⌈∧⌉x2 = x3⌈∧⌉x4)  by TrueCase THEN FormulaEquality 0
| | |
| | .\
| | . 10. ¬x2 = x4
| | . ⊢  Dec(x1⌈∧⌉x2 = x3⌈∧⌉x4)  by FalseCase THEN Analyze -2
| | . |
| | . 5. Q(x2)
| | . 6. Formula
| | . 7. x3 : Formula
| | . 8. x4 : Formula
| | . 9. x1 = x3
| | . 10. x1⌈∧⌉x2 = x3⌈∧⌉x4
| | . ⊢  x2 = x4  by FormulaEquality -1
| |
| .\
| . 9. ¬x1 = x3

| . ⊢  Dec(x1⌈∧⌉x2 = x3⌈∧⌉x4)  by FalseCase THEN Analyze -2
| . |
| . 5. Q(x2)
| . 6. Formula
| . 7. x3 : Formula
| . 8. x4 : Formula
| . 9. x1⌈∧⌉x2 = x3⌈∧⌉x4
| . ⊢  x1 = x3  by FormulaEquality -1
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|\
| 1. Q : Formula→Prop
| 2. ∀x:{x:Formula| Q(x) }, y:Formula. Dec(x = y)
| 3. x1 : {x:Formula| Q(x) }
| 4. x2 : Formula
| 5. Q(x2)  [not for witness]
| ⊢  ∀y@0:Formula. Dec(x1⌈∨⌉x2 = y@0)  by Analyze 0
| |
| 6. y@0 : Formula
| ⊢  Dec(x1⌈∨⌉x2 = y@0)
| | by let Solver ≡ FalseCase THEN FormulaEquality -1 in
| |    FormulaCases -1 THENL [Solver;Solver;Solver;Id;Solver]
| |
| 7. x3 : Formula
| 8. x4 : Formula
| ⊢  Dec(x1⌈∨⌉x2 = x3⌈∨⌉x4)  by Decide (x1 = x3)
| |
| |\
| | 9. x1 = x3
| | ⊢  Dec(x1⌈∨⌉x2 = x3⌈∨⌉x4)  by Decide (x2 = x4)
| | |
| | |\
| | | 10. x2 = x4
| | | ⊢  Dec(x1⌈∨⌉x2 = x3⌈∨⌉x4)  by TrueCase THEN FormulaEquality 0
| | |
| | .\
| | . 10. ¬x2 = x4
| | . ⊢  Dec(x1⌈∨⌉x2 = x3⌈∨⌉x4)  by FalseCase THEN Analyze -2
| | . |
| | . 5. Q(x2)
| | . 6. Formula
| | . 7. x3 : Formula
| | . 8. x4 : Formula
| | . 9. x1 = x3
| | . 10. x1⌈∨⌉x2 = x3⌈∨⌉x4
| | . ⊢  x2 = x4  by FormulaEquality -1
| |
| .\
| . 9. ¬x1 = x3
| . ⊢  Dec(x1⌈∨⌉x2 = x3⌈∨⌉x4)  by FalseCase THEN Analyze -2
| . |
| . 5. Q(x2)
| . 6. Formula
| . 7. x3 : Formula
| . 8. x4 : Formula
| . 9. x1⌈∨⌉x2 = x3⌈∨⌉x4
| . ⊢  x1 = x3  by FormulaEquality -1
|
.\
. 1. Q : Formula→Prop
. 2. ∀x:{x:Formula| Q(x) }, y:Formula. Dec(x = y)
. 3. y2 : {x:Formula| Q(x) }
. 4. y3 : Formula
. 5. Q(y3)  [not for witness]
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. ⊢  ∀y@0:Formula. Dec(y2⌈⇒⌉y3 = y@0)  by Analyze 0
. |
. 6. y@0 : Formula
. ⊢  Dec(y2⌈⇒⌉y3 = y@0)
. | by let Solver ≡ FalseCase THEN FormulaEquality -1 in
. |    FormulaCases -1 THENL [Solver;Solver;Solver;Solver;Id]
. |
. 7. y1 : Formula
. 8. y4 : Formula
. ⊢  Dec(y2⌈⇒⌉y3 = y1⌈⇒⌉y4)  by Decide (y2 = y1)
. |
. |\
. | 9. y2 = y1
. | ⊢  Dec(y2⌈⇒⌉y3 = y1⌈⇒⌉y4)  by Decide (y3 = y4)
. | |
. | |\
. | | 10. y3 = y4
. | | ⊢  Dec(y2⌈⇒⌉y3 = y1⌈⇒⌉y4)  by TrueCase THEN FormulaEquality 0
. | |
. | .\
. | . 10. ¬y3 = y4
. | . ⊢  Dec(y2⌈⇒⌉y3 = y1⌈⇒⌉y4)
. | .   by FalseCase THEN Analyze -2 THEN FormulaEquality -1
. | .      THEN
. | .      Trivial
. |
. .\
. . 9. ¬y2 = y1
. . ⊢  Dec(y2⌈⇒⌉y3 = y1⌈⇒⌉y4)  by FalseCase THEN Analyze -2
. . |
. . 5. Q(y3)
. . 6. Formula
. . 7. y1 : Formula
. . 8. y4 : Formula
. . 9. y2⌈⇒⌉y3 = y1⌈⇒⌉y4
. . ⊢  y2 = y1  by FormulaEquality -1
. . |

. . 10. y2 = y1
. . 11. y3 = y4
. . ⊢  y2 = y1  by Trivial
END
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