

Axiom of Propositional Logic, as Data Structure

Tactic used for same idea, in “native mode”

Axiom Top\_I :

“trivial”, “apply I”

holds propTop.

Axiom Conj\_I : forall f1 f2,

“split”

holds f1 ->

holds f2 ->

holds (propConj f1 f2).

Axiom Conj\_E1 : forall f1 f2,

“destruct H”, where “H : P  $\wedge$  Q”

holds (propConj f1 f2) ->

holds f1.

Axiom Conj\_E2 : forall f1 f2,

“destruct H”, where “H : P  $\wedge$  Q”

holds (propConj f1 f2) ->

holds f2.

Axiom NegNeg\_E : forall f,

“apply NNPP” (for LEM, use  
“generalize (classic F)” or  
“LEM F”)

holds (propNeg (propNeg f)) ->

holds f.

Axiom Impl\_I : forall f1 f2,

“intro”, “intros”

(holds f1 -> holds f2) ->

holds (propImpl f1 f2).

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Axiom Impl\_E : forall f1 f2,  
holds (propImpl f1 f2) ->  
holds f1 ->  
holds f2.

“apply”, “apply ... in ...”, “generalize”, “spec”

Axiom Disj\_I1 : forall f1 f2,  
holds f1 ->  
holds (propDisj f1 f2).

“left”

Axiom Disj\_I2 : forall f1 f2,  
holds f2 ->  
holds (propDisj f1 f2).

“right”

Axiom Disj\_E : forall f1 f2 f3,  
holds (propDisj f1 f2) ->  
(holds f1 -> holds f3) ->  
(holds f2 -> holds f3) ->  
holds f3.

“destruct”

Axiom Bot\_E : forall f,  
holds propBot ->  
holds f.

“elimtype False”

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Axiom Neg\_E : forall f,

“contradiction”, “destruct”

holds f ->

holds (propNeg f) ->

holds propBot.

Axiom Neg\_I : forall f,

“intro” (or “unfold not. intro.”)

(holds f -> holds propBot) ->

holds (propNeg f).