

MIDTERM 23.12.20

$$\forall x (Exp(x) \wedge Emp(x) \Rightarrow Wp(x))$$

$$\forall x (Exp(x) \wedge Work(x, Aico)) \Rightarrow Bonus(x)$$

$$\forall x Bonus(x) \Rightarrow Emp(x)$$

$$Bonus(Gino)$$

CNF: ALL HORROR CLAUSES!

$$\neg Exp(x) \vee \neg Emp(x) \vee Wp(x)$$

$$\neg Exp(x) \vee \neg Work(x, Aico) \vee Bonus(x)$$

$$\neg Bonus(x) \vee Emp(x)$$

$$Bonus(Gino)$$

$$UB = \{ \neg Exp(x), \neg Emp(x), Wp(x) \}_1,$$

$$\{ \neg Exp(x), \neg Work(x, Aico), Bonus(x) \}_2,$$

$$\{ \neg Bonus(x), Emp(x) \}_3, \{ Bonus(Gino) \}_4.$$

I have to add: $\{ Exp(Gino) \}_5$.

I have to negate the thesis: $\{ \neg Wp(Gino) \}_6$.

$$1 \text{ and } 3 \Rightarrow \{ \neg Exp(x), \neg Bonus(x), Wp(x) \}_2$$

$$2 \text{ and } 4 \Rightarrow \{ \neg Exp(Gino), Wp(Gino) \}_3$$

$$3 \text{ and } 5 \Rightarrow \{ Wp(Gino) \}_4$$

$$4 \text{ and } 6 \Rightarrow \{ \} \quad \text{Q.E.D.}$$

The thesis is: $\forall x (Exp(x) \wedge Work(x, Aico)) \Rightarrow Wp(x) \equiv \forall x \neg Exp(x) \vee \neg Work(x, Aico) \vee Wp(x)$

I have to negate it: $\{ Exp(R) \}_10, \{ Work(R, Aico) \}_11, \{ \neg Wp(R) \}_12$

$$1 \text{ and } 2 \Rightarrow \{ \neg Exp(x), Wp(x), \neg Work(x, Aico) \}_3$$

$$3 \text{ and } 10 \Rightarrow \{ Wp(R), \neg Work(R, Aico) \}_4$$

$$4 \text{ and } 11 \Rightarrow \{ Wp(R) \}_5$$

$$5 \text{ and } 12 \Rightarrow \{ \} \quad \text{Q.E.D.}$$

$$(\neg A \vee \neg B \vee C \vee D) \wedge (\neg C \vee A) \wedge (\neg D \vee A) \wedge (\neg C \vee B) \wedge (\neg D \vee B)$$

$$\forall x \forall y \neg f(x) \vee \neg g(x, y) \vee h(x, f(x, y))$$