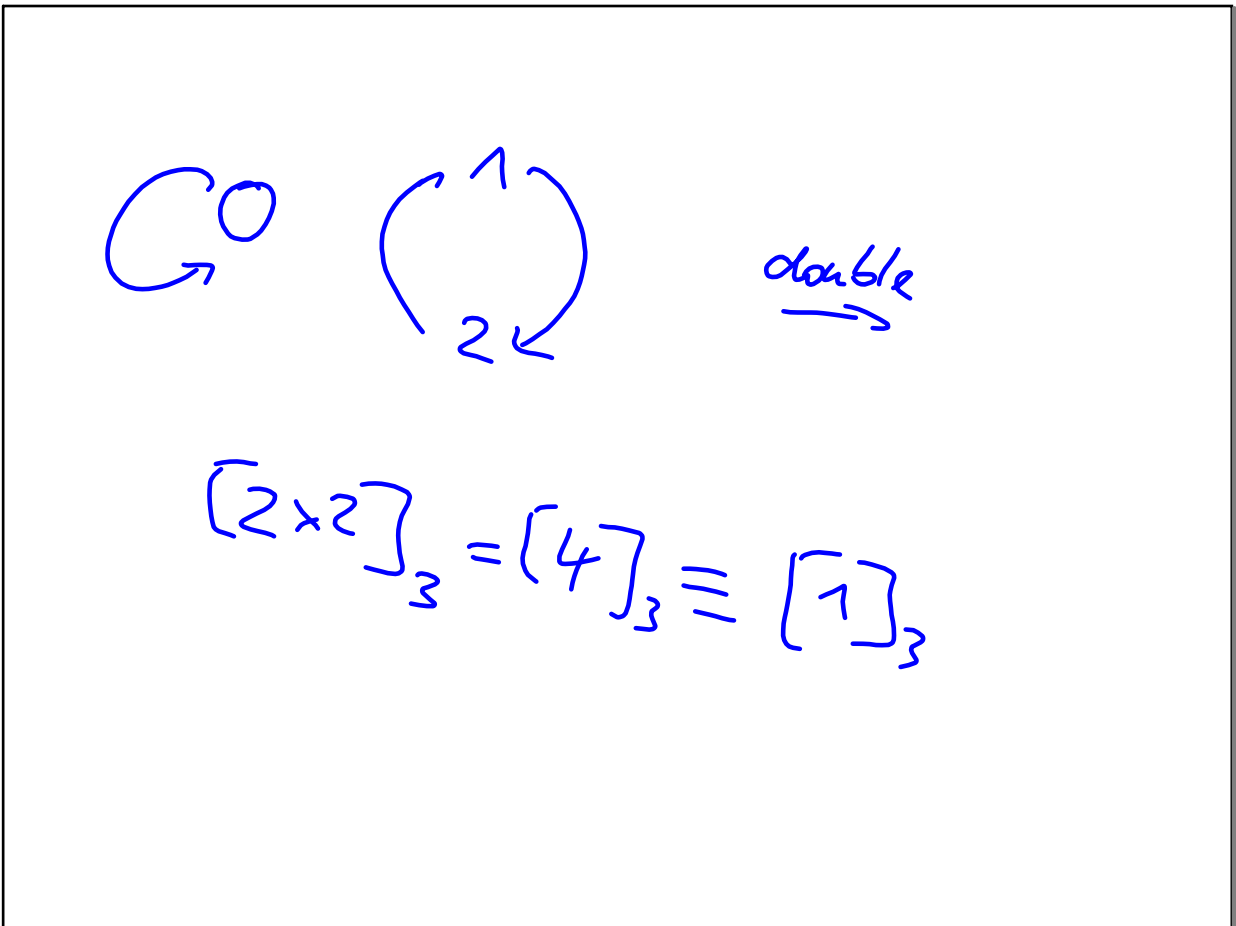


Mai 10-10:09



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$F \models G$  "F entails G"

in every model of F, also G holds  
 $\rightarrow$  infinitely many models

$\Rightarrow$  use a reasoner

assume: F holds, but G does not hold  
 Question: possible?

$F \wedge \neg G$   
 $(\neg F) = F_1 \wedge F_2$   
 $\neg G = \neg G_1 \vee \neg G_2$

$G = G_1 \wedge G_2$   
 $\neg G = \neg G_1 \vee \neg G_2$

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$\neg \text{person}(z)$       Query:  $\text{person}(z)?$

$\forall x: (\text{parent}(x) \rightarrow \exists y: \text{hasChild}(x,y))$

$\forall x,y: \text{hasChild}(x,y) \rightarrow \text{person}(y)$       ... were parents

$A \rightarrow B$   
 $\neg A \vee B$

$\text{parent}(X_1) \rightarrow \exists y: \text{hasChild}(X_1,y)$   
 $\text{hasChild}(X_2, Y_2) \rightarrow \text{person}(Y_2)$       \*  $\rightarrow$

(FS style  $\square X_1 \rightarrow \text{john}$ )

$\exists y: \text{hasChild}(X_1,y)$   
 ~~$\exists y: \text{hasChild}(\text{john}, y)$~~   
 ~~$\text{hasChild}(X_1, \text{childof}(X_1))$~~   
 intent a new identifier "a"  
 intent a new function  
 $\rightarrow \text{hasChild}(\text{john}, a)$

$\rightarrow \neg \text{hasChild}(X_2, Y_2)$        $\text{person}(Y_2)$

~~$X_2 \rightarrow \text{john}$~~   $X_1$        ~~$\text{person}(a)$~~   
 ~~$Y_2 \rightarrow a$~~   
 $Y_2 \rightarrow \text{childof}(X_1)$        $\text{person}(\text{childof}(X_1))$

$\Rightarrow$  Evaluation (algebraic):

parent	binary answer	
john	• $X_1 = X_2 = \text{john}$	person(childof(john))
Kate	• $X_1 = X_2 = \text{Kate}$	person(childof(Kate))

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S& .64

$$\forall x (p(x) \rightarrow q(x))$$

$$p(a)$$

$$q(b)$$

$$\neg q(x)$$

$$\Box X \rightarrow b$$

first answer  
Search for other ones

$$p(x_2) \rightarrow q(x_2) \dots$$

$$\neg p(x_2)$$

$$q(x_2)$$

$$\Box X_2 \rightarrow a$$

$$\Box X \rightarrow X_2$$

second  
answer: q

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