

$$1. \quad \forall x [\exists z \text{ Animal}(z) \Rightarrow \text{kills}(x, z)] \Rightarrow [\forall y \neg \text{low}(y, x)]$$

→ Step 1:- Eliminate \Rightarrow

$$\forall x [\neg \exists z \neg \text{Animal}(z) \vee \text{kills}(x, z)] \vee [\forall y \neg \text{low}(y, x)]$$

Step 2:- \neg inward.

$$\forall x [\forall z \text{ Animal}(z) \wedge \neg \text{kills}(x, z)] \vee [\forall y \neg \text{low}(y, x)]$$

Step 3:- change quantifier

$$\forall x [\forall z \text{ Animal}(z) \wedge \neg \text{kills}(x, z)] \vee [\forall z \neg \text{low}(z, x)]$$

Step 4:- Skolemize

$$\forall x [\text{Animal}(f(x)) \wedge \neg \text{kills}(x, f(x))] \vee \neg \text{low}(g(x), x)$$

Step 5:- Drop universal quantifier

$$[\text{Animal}(f(x)) \wedge \neg \text{kills}(x, f(x))] \vee \neg \text{low}(g(x), x)$$

Step 6:- Distribute

$$[\text{Animal}(f(x)) \vee \neg \text{low}(g(x), x)] \wedge [\text{Animal}(f(x)) \vee \neg \text{low}(g(x), x)]$$

2. Rules

- cold and precipitation \rightarrow snow

$\neg \text{cold} \vee \neg \text{precipitation} \vee \text{snow}$

- January \rightarrow cold

$\neg \text{January} \vee \text{cold}$

- clouds \rightarrow precipitation

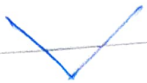
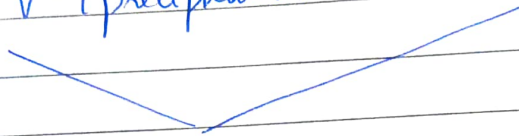
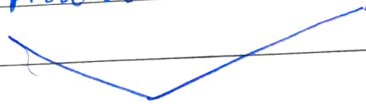
$\neg \text{clouds} \vee \text{precipitation}$

facts

- January, clouds

Prove

- snow

 $\neg \text{snow} \rightarrow \text{cold} \vee \neg \text{precipitation} \vee \text{snow}$

 $\neg \text{cold} \vee \neg \text{precipitation} \vee \neg \text{January} \vee \text{cold}$

 $\neg \text{January} \vee \neg \text{precipitation}$
 $\neg \text{clouds} \vee \text{precipitation}$


January

 $\neg \text{January} \vee \neg \text{clouds}$

 $\neg \text{clouds}$

clouds



empty.