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(1) →

Step 1 :- Eliminate

Given: $\forall x [\exists z \text{ Animal}(z) \Rightarrow \text{Kills}(x, z)] \Rightarrow [\forall y \neg \text{Loves}(y, x)]$

$\rightarrow \forall x [\neg \exists z \neg \text{Animal}(z) \vee \text{Kills}(x, z)] \vee [\forall y \neg \text{Loves}(y, x)]$

Step 2 :- $\neg$ inward

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

Step 3 : change quantifier

$\forall x [\forall z \text{ Animal}(z) \wedge \neg \text{Kills}(x, z)] \forall [\forall z \neg \text{Loves}(z, x)]$

Step 4 :- Skolemize

$\forall x [\text{Animal}(F(x)) \wedge \neg \text{Kills}(x, F(x))] \vee \neg \text{Loves}(G(x), x)$

Step 5 : Drop universal quantifier

$[\text{Animal}(F(x)) \wedge \neg \text{Kills}(x, F(x))] \vee \neg \text{Loves}(G(x), x)$

Step 6 : Distribute

$[\text{Animal}(F(x)) \vee \neg \text{Loves}(G(x), x)] \wedge$
$[\text{Animal}(F(x)) \vee \neg \text{Loves}(G(x), x)]$

(2)

RULES

- Cold and precipitation → Snow
  $\neg$ Cold $\vee \neg$ precipitation $\vee$ snow
- January → cold
  $\neg$ January $\vee$ cold
- Clouds → precipitation
  $\neg$ clouds $\vee$ precipitation

Facts — January, clouds

Prove — Snow