

First order logic \Rightarrow Prove the given query using forward reasoning
 \rightarrow This chaining methodology starts with a base state and uses the inference rules and available knowledge in forward direction till it reaches the goal state.

Question:-

As per the law, it is a crime for an American to sell weapons to hostile nations. Country A, an enemy of America, has some missiles, and all the missiles were sold to it by Robert, who is an American citizen.
 \Rightarrow Prove that "Robert is criminal".

Given facts :-

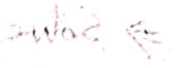
- \rightarrow Robert is an American \Rightarrow American(Robert)
- \rightarrow Country A \Rightarrow enemy of America \Rightarrow Enemy(A, America)
- \rightarrow It is a crime for an American to sell weapons to hostile nations

$$\text{American}(p) \wedge \text{Weapon}(q) \wedge \text{Sells}(p, q, r) \wedge \text{Hostile}(r) \Rightarrow \text{Criminal}(p)$$
- \rightarrow Country A has some missiles

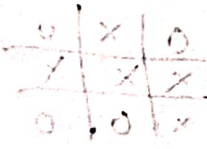
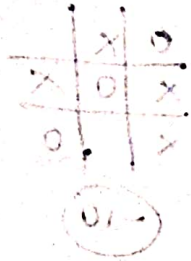
$$\exists x \text{ Owns}(A, x) \wedge \text{Missile}(x)$$
- \rightarrow Owns(A, T1) } Existential instantiation,
- \rightarrow Missile(T1) } introducing a new const T1
- $\rightarrow \forall x \text{ Missile}(x) \wedge \text{Owns}(A, x) \Rightarrow \text{Sells}(\text{Robert}, x, A)$
- \rightarrow Missiles are weapons

$$\text{Missile}(x) \Rightarrow \text{Weapon}(x)$$
- $\rightarrow \forall x \text{ Enemy}(x, \text{America}) \Rightarrow \text{Hostile}(x)$

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$(p, q, x) \wedge$



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