

Inference Rules

p, q, r are any propositions, not necessarily atoms

- Modus ponens is an inference rule. If p is true, and if $p \rightarrow q$ is true, then q is true.
- That is, if $KB \models p$ and $KB \models p \rightarrow q$, then $KB \models q$.

□ Resolution inference rule (really, two rules)

Unit Resolution - If $KB \models p \vee q$ and $KB \models \neg p$, then

$KB \models q$. if p is F, then q is true

General resolution - If $KB \models p \vee q$ and $KB \models \neg p \vee r$, then

$KB \models q \vee r$. if p is true, then r is true

- Remember p and q and r can be any

propositions, not just atoms.

from $p \vee q_1 \vee q_2$ and $\neg p \vee r_1 \vee r_2 \vee r_3$, infer $q_1 \vee q_2 \vee r_1 \vee r_2 \vee r_3$

<u>P</u>	<u>Q</u>	<u>R</u>	<u>$P \vee Q$</u>	<u>$\neg P \vee R$</u>	<u>$Q \vee R$</u>
T	T	T	T	T	T ✓
T	T	F	T	F	T
T	F	T	T	T	T ✓
T	F	F	T	F	F
F	T	T	T	T	T ✓
F	T	F	T	T	T ✓
F	F	T	F	T	T
F	F	F	F	T	F