Valid, Satisfiable

- Valid: always true. $KB \models \alpha$ iff. $KB \Rightarrow \alpha$ is valid
- Satisfiable: can be true.
- Unsatisfiable: always false

- Proof: $\frac{\alpha}{\beta}$: $\alpha \Rightarrow \beta$

- All these symbols are simply want to avoid reusing of $\Rightarrow$, —, $\models$, $\vdash_i$

Proofing the KB entailment

$A \Leftrightarrow (B \vee C) \models_? B \Rightarrow A$ **as an example**

- Convert to CNFs $A \Leftrightarrow (B \vee C)$
- Proof by contradict: $KB \Rightarrow \alpha$ to $KB \wedge \neg\alpha$ is unsatisfiable (always false)
  - There is no case where KB is true and α is false

- Resolution: $(A \vee B) \wedge (\neg A \wedge C) = (B \vee C)$
- Empty ($A \wedge \neg A = F$) means $KB \wedge \neg\alpha$ is unsatisfiable then $KB \models \alpha$