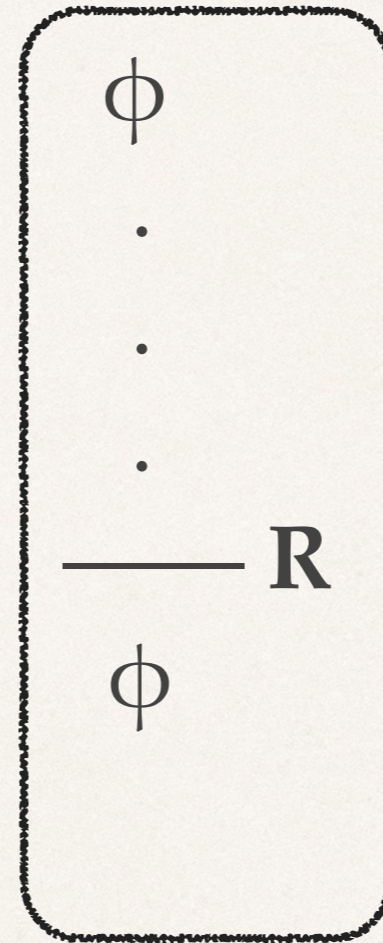
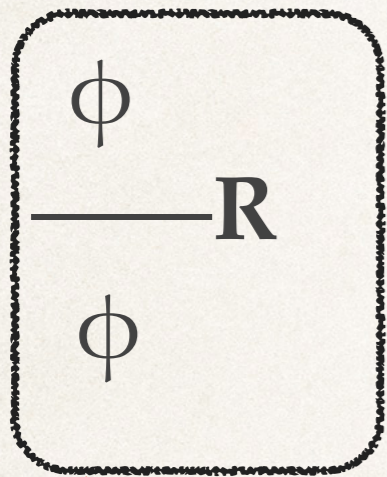


Reiteration

$$\begin{array}{c} \phi \\ \hline \text{R} \\ \phi \end{array}$$

If you have
derived a formula, you
can repeat it in the
next line

Reiteration



WRONG use of R!

If you have
derived a formula, you
can repeat it in the
next line

Rules for \wedge

$$\frac{\phi \quad \psi}{\phi \wedge \psi} \wedge I$$

Rules for \wedge

$$\frac{\phi \quad \psi}{\phi \wedge \psi} \wedge I$$

$$\frac{\phi \wedge \psi}{\phi} \wedge E$$

$$\frac{\phi \wedge \psi}{\psi} \wedge E$$

Rules for \wedge

$$\frac{\phi \quad \psi}{\phi \wedge \psi} \wedge I$$

$$\frac{\phi \wedge \psi}{\phi} \wedge E$$

$$\frac{\phi \wedge \psi}{\psi} \wedge E$$

Derivation rules are introduced for the different connectives and there are **introduction rules** and **elimination rules** such as $\wedge I$ and $\wedge E$

Rules for \rightarrow

$$\frac{\phi \quad \phi \rightarrow \psi}{\psi} \rightarrow E$$

This is *modus ponens*

Rules for \rightarrow

$$\frac{\phi \quad \phi \rightarrow \psi}{\psi} \rightarrow E$$

$$\frac{\begin{array}{c} [\phi]^i \\ \cdot \\ \cdot \\ \cdot \\ \psi \end{array}}{\phi \rightarrow \psi} \rightarrow I^i$$

This is *modus ponens*

This rule says that if you **assume** ϕ and then **manage to derive** ψ , you can **derive** $\phi \rightarrow \psi$ and **cancel assumption** ϕ

Some Mistakes

$$\begin{array}{c} \phi \\ \cdot \\ \cdot \quad \phi \rightarrow \psi \\ \hline \psi \end{array} \rightarrow \mathbf{E}$$

WRONG use of $\rightarrow \mathbf{E}$!

Some Mistakes

$$\frac{\begin{array}{l} \phi \\ \cdot \\ \cdot \quad \phi \rightarrow \psi \end{array}}{\psi} \rightarrow E$$

WRONG use of $\rightarrow E$!

$$\frac{\begin{array}{l} \phi \\ \cdot \\ \cdot \quad \psi \end{array}}{\phi \wedge \psi} \wedge I$$

WRONG use of $\wedge I$!