

Equality rules

▷ $c = c$ =I

n $\left| \begin{array}{l} P(a) \\ \vdots \end{array} \right.$

m $\left| \begin{array}{l} a = b \\ \vdots \end{array} \right.$

▷ $P(b)$ =E: n, m

Universal rules

n $\left| \begin{array}{l} c \\ \hline \vdots \end{array} \right.$ c must not occur
outside subproof

m $\left| \begin{array}{l} P(c) \end{array} \right.$

▷ $\forall xP(x)$ $\forall I: n - m$

n $\left| \begin{array}{l} c \\ \hline P(c) \\ \vdots \end{array} \right.$ c must not occur
outside subproof

m $\left| \begin{array}{l} Q(c) \end{array} \right.$

▷ $\forall x(P(x) \rightarrow Q(x))$ **GCP:** $n - m$

n $\left| \begin{array}{l} \forall xP(x) \\ \vdots \end{array} \right.$

▷ $P(c)$ $\forall E: n$

Existential rules

n $\left| \begin{array}{l} P(c) \\ \vdots \end{array} \right.$

▷ $\exists xP(x)$ $\exists I: n$

n $\left| \begin{array}{l} \exists xP(x) \end{array} \right.$

m $\left| \begin{array}{l} c \\ \hline P(c) \\ \vdots \end{array} \right.$ c must not occur
outside subproof

l $\left| \begin{array}{l} S \end{array} \right.$

▷ S $\exists E: n, m - l$