

Theorema 2.0: A First Tour

Tma2tex-parsing Info/Legend

- ◆ Yellow: Represents entry points to parsing.
- ◆ Orange: Helper Definitions were defined in the Theorema Notebook interface, but are directly included in the following formula.
- ◆ Red: Matches unspecified cells or generic content.
- ◆ Blue: Represents lists of specific content.
- ◆ Purple: Used for lists of generic cells.
- ◆ Green: Represents grouped data cells.



1 Proving

We want to prove

$$(\forall_x (P[x] \vee Q[x])) \wedge (\forall_y (P[y] \Rightarrow Q[y])) \Leftrightarrow (\forall_x Q[x]).$$

To prove a formula like the above, we need to enter it in the context of a `Theorema` environment.

♦ **Proposition** : FIRST TEST, 2014

$$((\forall x (P[x] \vee Q[x]) \wedge \forall y (P[y] \rightarrow Q[y])) \iff \forall x Q[x])$$



2 Computing

◆ **Definition : LEXICAL ORDERING**

- ♦ $\forall ab \ (LessTM_{lex} (a) b : \iff \exists (a_i < b_i \wedge \forall a_j = b_j))$

Definition : MONOMIALS
$$\blacklozenge \forall K m2 \left(Mon[K]_{TimesTM} (m1, m2) := \left(K_{TimesTM} (m1_1, m2_1) \upharpoonright_{[PlusTM](m1_{2i}, m2_{2i})} \right) \right)$$

3 Set Theory

◆ **Definition :** SUBSET

- ◆ $\forall xy (x \subseteq y := \forall z (zx \rightarrow zy))$

♦♦ **Proposition :** TRANSITIVITY OF

$$\forall ac ((a \subseteq b \wedge b \subseteq c) \rightarrow a \subseteq c)$$
