Theorema 2.0: A First Tour

NB reached List of cells reached CellGroupData reached List of cells reached NullCell reached

We consider “proving”, “computing”, and “solving” as the three basic mathematical activities.

CellGroupData reached List of cells reached

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.

1.1 Proposition (First Test, 2014)

$((\forall x\,(P[x] \vee Q[x])) \wedge (\forall y\,(P[y] \Rightarrow Q[y]))) \Leftrightarrow (\forall x Q[x])$ ■

Cell reached CellGroupData reached List of cells reached Cell reached Cell reached Cell reached Cell reached Cell reached Cell reached Cell reached Cell reached Cell reached Cell reached CellGroupData reached List of cells reached

2 Computing

2.1 Definition (Lexical Ordering)

Cell reached $\mathrm{a}<_{lex} b \to (\exists i = 1, \ldots, a\,(a_i < b_i \wedge (\forall j = 1, \ldots, i-1\,(a_j = b_j))))$ ■

Cell reached Cell reached CellGroupData reached List of cells reached Cell reached

2.2 Definition (Monomials)

Cell reached Cell reached Cell reached $\mathrm{m1} \underset{M}{*} m2 := <m1_1 \underset{K}{*} m2_1, <(m1_2)_i + (m2_2)_i \underset{i=1,\ldots,m1_2}{|} >>(m1 \underset{M}{<} m2) TagBox[RowBox[:, ,], Identity, SyntaxForm- >$
$ab]\,(m1_2 <_{lex} m2_2)$ ■

Cell reached Cell reached Cell reached CellGroupData reached List of cells reached

3 Set Theory

3.1 Definition (subset)

Cell reached $\mathrm{xy}:=(\forall z\,(zx \Rightarrow zy))$ ■

Cell reached

3.2 Proposition (transitivity of)

$\forall a, b, c\,((ab \wedge bc) \Rightarrow ac)$ ■

Cell reached CellGroupData reached List of cells reached Cell reached Cell reached CellGroupData reached List of cells reached Cell reached Cell reached