

syn.1 Abbreviated Syntax

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sec

Terms as defined in ?? are sometimes cumbersome to write, so it is useful to introduce a more concise syntax. We must of course be careful to make sure that the terms in the concise notation also are uniquely readable. One widely used version called *abbreviated terms* is as follows.

1. When parentheses are left out, application takes place from left to right. For example, if M , N , P , and Q are terms, then $MNPQ$ abbreviates $((MN)P)Q$.
2. Again, when parentheses are left out, lambda abstraction is given the widest scope possible. For example, $\lambda x. MNP$ is read as $(\lambda x. MNP)$.
3. A lambda can be used to abstract multiple variables. For example, $\lambda xyz. M$ is short for $\lambda x. \lambda y. \lambda z. M$.

For example,

$$\lambda xy. xxyx\lambda z. xz$$

abbreviates

$$(\lambda x. (\lambda y. (((xy)y)x)(\lambda z. (xz))))).$$

Problem syn.1. Expand the abbreviated term $\lambda g. (\lambda x. g(xx))\lambda x. g(xx)$.

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Bibliography