Definition

A complex HASKELL expression $\underline{\text{exp}}$ is *transformed* into $\underline{\text{exp}}_{tr}$

iff

$\underline{\text{exp}}_{tr}$ results from $\underline{\text{exp}}$ by repeated application of Rules (1) – (12) and no rule is applicable to $\underline{\text{exp}}_{tr}$ any more.

Theorem

Let $\underline{\text{exp}}$ be a complex HASKELL expression. Then we have:

(a) Application of the rules (1) – (12) *terminates*, i.e., there is an expression $\underline{\text{exp}}_{tr}$.

(b) Up to Rule (10), the rules are *"confluent"*, i.e., $\underline{\text{exp}}_{tr}$ is unique up to the order of declarations and nested `let`-expressions.

(c) $\underline{\text{exp}}_{tr}$ is a *simple* HASKELL expression.