

$$\begin{array}{l} \lambda \\ \lambda \\ \lambda \\ \lambda \\ P = \\ \{E, Sign2, R, Fn\} \\ E = \\ \{L, A, C\} \\ L \\ Sign2 \\ R \\ Fn \\ \lambda \end{array}$$

$$(\lambda x.M)N$$

$$M[x = N]$$

$$\begin{array}{l} M \\ N \\ (\lambda x.M)N \end{array}$$

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

$$\lambda y.y$$

$$y$$

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

$$\begin{array}{l} y \\ \alpha \\ \beta \\ (\lambda x.M)N \\ x \\ M \\ N \end{array}$$

$$x[x = N] \Rightarrow N$$

$$y[x = N] \Rightarrow y$$

$$(PQ)[x = N] \Rightarrow (P[x = N]Q[x = N])$$

$$(\lambda y.P)[x = N] \Rightarrow (\lambda y.P[x = N]), y \notin FV(N)$$

$$(\lambda x.P)[x = N] \Rightarrow (\lambda x.P)$$

$$\begin{array}{l} N \\ N \end{array}$$

$$x[x = N] \Rightarrow N$$

$$y[x = N] \Rightarrow y$$

$$(PQ)[x = N] \Rightarrow (P[x = N]Q[x = N])$$

$$N$$

$$(\lambda y.P)[x = N] \Rightarrow (\lambda y.P[x = N]), y \notin FV(N)$$

$$\begin{array}{l} y \notin \\ FV(N) \\ N \\ y \\ N \\ \alpha \\ \lambda y.M \\ y \\ x \end{array}$$

$$(\lambda x.P)[x = N] \Rightarrow (\lambda x.P)$$

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