λ
λ
λ
λ
$P =$
$\{E, Sign2, R, Fn\}$
$E =$
$\{L, A, C\}$
L
$Sign2$
R
Fn
?
λ

$(\lambda x.M)N$

$M[x = N]$

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

$(\lambda xy.x)y$

$\lambda y.y$

y

$(\lambda xz.x)y$

y
α
β
$(\lambda x.M)N$
x
M
N

$x[x = N] \Rightarrow N$

$y[x = N] \Rightarrow y$

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

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

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

N
N

$x[x = N] \Rightarrow N$

$y[x = N] \Rightarrow y$

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

N

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

$y \notin$
$FV(N)$
N
y
N
α
$\lambda y.M$
y
x

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

```
\documentclass{article} %
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