$$e ::= x \mid e_1 \; e_2 \mid \lambda x. \; e$$

fv : LC → 2^V

$$fv(x) = \{x\}$$

$$fv(e_1 \; e_2) = fv(e_1) \cup fv(e_2)$$

$$fv(\lambda x. \; e) = fv(e) \setminus \{x\}$$

subst : LC → V → LC → LC

$subst(x,y,e') = e'$	when $x=y$
$subst(x,y,e') = x$	when $x \neq y$
$subst(e_1 \; e_2,y,e') = subst(e_1,y,e') \; subst(e_2,y,e')$	
$subst(\lambda x. \; e,y,e') = \lambda x. \; e$	when $x=y$
$subst(\lambda x. \; e,y,e') = \lambda x. \; subst(e,y,e')$	when $x \neq y$

$$e_1[e_2/x] \triangleq subst(e_1,x,e_2)$$

$$\lambda x. \; e =_\alpha \lambda y. \; e[y/x] \quad \text{when } y \notin e$$

$$(\lambda x. \; e_1) \; e_2 =_\beta e_1[e_2/x]$$