Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Terminals: ( ) *λ . a b c d*

<LcExp> ::= <Identifier> |  
 (*λ* <Identifier>. <LcExp>) |  
 (<LcExp> <LcExp>)

<Identifier> ::= a | b | c | d

Prove ((*λ* a. a) (*λ* b. b)) is in the language by drawing a derivation tree.

Explain in words why (*λ* (*λ* b. b). a) is not in the language.

<buffexp> ::= [ <id> & <exp> ] | @ <id> % <exp> @ | ~ <id>

<id> ::= x | y

|  |  |
| --- | --- |
| input | Is it a buffexp? |
| y |  |
| ~ y |  |
| [ x & ~ y ] |  |
| @ [ x & ~ y] % [ x & ~ y] @ |  |
| @ y % [ y & [ x & ~ x ] ] @ |  |

<bufflist> :== ( { <id> {,}+ }\* )

<id> ::= x | y

|  |  |
| --- | --- |
| input | Is it a bufflist? |
| () |  |
| ( x ,, y ,,,, ) |  |
| ( x , y , y , ) |  |
| (x y) |  |
| ( y , x ) |  |