F14-Exercise (Key)

Course in Semantics · Ling 531 / 731

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1 Abstract functions

1. Complete the following applications/β-reductions, until you run out of arguments.

1. [λf $\in$ $D_{\langle e,\, t\rangle}$. f(x)](Q) = Q(x)
2. [λg $\in$ $D_{\langle e,\, t\rangle}$. g(x)](Q) = Q(x)
3. [λf $\in$ $D_{\langle e,\, t\rangle}$.$\lambda$x $\in$ D_e. g(x)](Q) = λx $\in$ D_e. Q(x)
4. [λf $\in$ $D_{\langle e,\, t\rangle}$.$\lambda$x $\in$ D_e. g(x)](Q)(x) = Q(x)
5. [λf $\in$ $D_{\langle e,\, t\rangle}$.$\lambda$x $\in$ D_e. g(x)](x)(Q) = (watch out!) x(Q); the function is x and the argument is Q
6. [λf $\in$ $D_{\langle e,\, t\rangle}$.$\lambda$x $\in$ D_e. g(f(x))](A)(b) = g(A(b))

2 Similar but with natural language

1. [λf $\in$ $D_{\langle e,\, t\rangle}$. f(y)]($\lambda$x $\in$ D_e. cat(x)) = [λx $\in$ D_e. cat(x)](y) = cat(y)
2. [λf $\in$ $D_{\langle e,\, t\rangle}$. f(x)]($\lambda$y $\in$ D_e. happy(y)) =
   [λy $\in$ D_e. happy(y)](x) = happy(x)
3. [λf $\in$ $D_{\langle e,\, t\rangle}$. f(Marie)]($\lambda$x $\in$ D_e. happy(x)) =
   [λx $\in$ D_e. happy(x)](Marie) = happy(Marie)
4. [λg $\in$ $D_{\langle e,\, t\rangle}$.$\lambda$x $\in$ D_e. g(x)]($[\![$ *broad* $]\!]$)(the Mississippi River) =
   [λx $\in$ D_e. broad(x)](MR) = broad(MR)
5. [λf $\in$ $D_{\langle e,\, t\rangle}$.$\lambda$x $\in$ D_e. Q(f(x))](λy $\in$ D_e. Greek(y))(Apollo) =
   [λx $\in$ D_e. Q([λy $\in$ D_e. Greek(y)](x))](Apollo) =
   Q([λy $\in$ D_e. Greek(y)](Apollo)) =
   Q(Greek(Apollo))