

Homework 3

Filimonov Igor

4 сентября 2023 г.

Task 1. $((\lambda a.(\lambda b.bb)(\lambda b.bb))b)((\lambda c.(cb))(\lambda a.a)) \xrightarrow{\beta} ((\lambda b.b)(\lambda b.b))((\lambda c.(cb))(\lambda a.a)) \xrightarrow{\beta}$
 $((\lambda b.b)(\lambda b.b))((\lambda a.a)b) \xrightarrow{\beta} (\lambda b.b)(\lambda b.b)b$

This term doesn't have normal form since we didn't get it using normal strategy

Task 2. $SKK = (\lambda xyz.xz(yz))(\lambda xy.x)(\lambda xy.x) = (\lambda x.\lambda y.\lambda z.xz(yz))(\lambda x.\lambda y.x)(\lambda x.\lambda y.x) \xrightarrow{\beta}$
 $(\lambda y.\lambda z.(\lambda x.\lambda y.x)z(yz))(\lambda x.\lambda y.x) \xrightarrow{\beta} \lambda z.(\lambda x.\lambda y.x)z((\lambda x.\lambda y.x)z) \xrightarrow{\beta} \lambda z.(\lambda x.\lambda y.x)z\lambda y.z \xrightarrow{\beta}$
 $\lambda z.(\lambda y.z)\lambda y.z \xrightarrow{\beta} \lambda z.z = I$