

Task 1.

$$\begin{aligned} & ((\lambda a.(\lambda b.b\ b)\ (\lambda b.b\ b))\ b)\ ((\lambda c.(c\ b))\ (\lambda a.a)) \xrightarrow{\beta} \\ & ((\lambda b.b\ b)\ (\lambda b.b\ b))\ ((\lambda c.(c\ b))\ (\lambda a.a)) \xrightarrow{\beta} \\ & ((\lambda b.b\ b)\ (\lambda b.b\ b))\ (((\lambda a.a)\ b)) \xrightarrow{\beta} \\ & ((\lambda b.b\ b)\ (\lambda b.b\ b))\ b \end{aligned}$$

Task 2.

Доказать, что $SKK = I$

$$\begin{aligned} & (\lambda x\ y\ z.x\ z\ (y\ z))\ (\lambda x\ y.x)\ (\lambda x\ y.x) = \\ & (\lambda x.\lambda y.\lambda z.x\ z\ (y\ z))\ (\lambda x.\lambda y.x)\ (\lambda x.\lambda y.x) \xrightarrow{\beta} \\ & (\lambda t.\lambda z.(\lambda x.\lambda y.x)\ z\ (t\ z))\ (\lambda x.\lambda y.x) \xrightarrow{\beta} \\ & (\lambda z.(\lambda x.\lambda y.x)\ z\ ((\lambda x.\lambda y.x)\ z)) \xrightarrow{\beta} \\ & (\lambda z.(\lambda y.z)\ ((\lambda x.\lambda y.x)\ z)) \xrightarrow{\beta} \\ & (\lambda z.z) \end{aligned}$$