

$$(!) \text{ S K K} = \text{I}$$

Proof:

$$\text{I} \equiv \lambda x.x$$

$$\text{S} \equiv \lambda x \, y \, z. x \, z \, (y \, z)$$

$$\text{K} \equiv \lambda x \, y. x$$

$$\begin{aligned} \text{S K K} &\equiv (\lambda x \, y \, z. x \, z \, (y \, z)) \, (\lambda x \, y. x) \, (\lambda x \, y. x) \\ &\rightarrow_{\beta} (\lambda y \, z. (\lambda x \, y. x) \, z \, (y \, z)) \, (\lambda x \, y. x) \\ &\rightarrow_{\beta} (\lambda y \, z. (\lambda y. z) \, (y \, z)) \, (\lambda x \, y. x) \\ &\rightarrow_{\beta} (\lambda z. (\lambda y. z) \, ((\lambda x \, y. x) \, z)) \\ &\rightarrow_{\beta} (\lambda z. (\lambda y. z) \, (\lambda y. z)) \\ &\rightarrow_{\beta} (\lambda z. z) \equiv \text{I} \end{aligned}$$