

Step 6

$$\begin{array}{ccccc}
 & S^0 \wedge S^0 & \xrightarrow{\text{id}_{\text{Sets}_*|S^0,S^0}^{\otimes,-1}} & S^0 \otimes_{\text{Sets}_*} S^0 & \xrightarrow{S^0 \text{id}_{S^0} \wedge \text{id}_{\mathbb{1}|\text{Sets}_*}^{\otimes,-1}} \\
 \nearrow \rho_{S^0}^{\text{Sets}_*,-1} & & & & \\
 S^0 & \xrightarrow{\rho_{S^0}^{\prime,-1}} & S^0 \otimes_{\text{Sets}_*} \mathbb{1}_{\text{Sets}_*} & & \\
 \downarrow [x] \wedge \text{id}_{S^0} & (1) & \downarrow [x] \otimes_{\text{Sets}_*} \text{id}_{S^0} & & \\
 (3) & & (4) & & \\
 & X \wedge S^0 & \xrightarrow{\text{id}_{\text{Sets}_*|X,S^0}^{\otimes,-1}} & X \otimes_{\text{Sets}_*} S^0 & \xrightarrow{-\text{id}_X \wedge \text{id}_{\mathbb{1}|\text{Sets}_*}^{\otimes,-1}} \\
 \nearrow \rho_X^{\text{Sets}_*,-1} & & & & \\
 X & \xrightarrow{\rho_X^{\prime,-1}} & X \otimes_{\text{Sets}_*} \mathbb{1}_{\text{Sets}_*} & & \\
 \downarrow [x] & (2) & & & \\
 & & & &
 \end{array}$$

(5)