

Step 1

Commutative diagram illustrating the relationship between various tensor products and maps:

- Top row: $pt \times pt \xrightarrow{id_{Sets|pt,pt}^{\otimes, -1}} pt \otimes_{Sets} pt$
- Bottom row: $A \times pt \xrightarrow{id_{Sets|A,pt}^{\otimes, -1}} A \otimes_{Sets} pt$
- Rightmost column: $pt \otimes_{Sets} pt \xrightarrow{id_{pt} \times id_{1_{Sets}}^{\otimes, -1}} pt \otimes_{Sets} 1_{Sets}$
- Bottom-right column: $A \otimes_{Sets} pt \xrightarrow{id_A \times id_{1_{Sets}}^{\otimes, -1}} A \otimes_{Sets} 1_{Sets}$
- Horizontal maps: $pt \xrightarrow{\rho_{pt}^{' , -1}} pt \otimes_{Sets} 1_{Sets}$ and $A \xrightarrow{\rho_A^{' , -1}} A \otimes_{Sets} 1_{Sets}$
- Vertical maps: $pt \xrightarrow{[a]} A$, $pt \times pt \xrightarrow{[a] \times id_{pt}} A \times pt$, $pt \otimes_{Sets} pt \xrightarrow{[a] \otimes_{Sets} id_{pt}} A \otimes_{Sets} pt$, and $pt \otimes_{Sets} 1_{Sets} \xrightarrow{[a] \times id_{1_{Sets}}} A \otimes_{Sets} 1_{Sets}$
- Diagonal maps: $pt \xrightarrow{\rho_{pt}^{Sets, -1}} pt \times pt$ and $A \xrightarrow{\rho_A^{Sets, -1}} A \times pt$
- Conditions (1) through (5) are indicated by arrows and labels within the diagram.