$$(\mathbf{A} \times \mathbf{1}) \times \mathbf{B} \xrightarrow{\operatorname{as}_{\mathbf{A}, \mathbf{1}, \mathbf{B}}} \mathbf{A} \times (\mathbf{1} \times \mathbf{B})$$

$$\operatorname{ru}_{\mathbf{A}} \times \operatorname{id}_{\mathbf{B}} \xrightarrow{\mathbf{A} \times \mathbf{B}} \operatorname{id}_{\mathbf{A}} \times \operatorname{lu}_{\mathbf{B}}$$

$$(a, b)$$