

$$\begin{array}{ccc}
 \text{Hom}_{\mathbf{C}}(X; Y) \otimes \text{Hom}_{\mathbf{C}}(Y; Y) & \xrightarrow{m_{X, Y, Y}} & \text{Hom}_{\mathbf{C}}(X; Y) \\
 \uparrow \text{id}_{\text{Hom}_{\mathbf{C}}(X; Y)} \otimes j_Y & \nearrow \text{ru} & \nwarrow \text{lu} \\
 \text{Hom}_{\mathbf{C}}(X; Y) \otimes 1 & & 1 \otimes \text{Hom}_{\mathbf{C}}(X; Y) \\
 & & \uparrow j_X \otimes \text{id}_{\text{Hom}_{\mathbf{C}}(X; Y)}
 \end{array}$$

$\text{Hom}_{\mathbf{C}}(X; Y) \otimes \text{Hom}_{\mathbf{C}}(Y; Y) \xrightarrow{m_{X, Y, Y}} \text{Hom}_{\mathbf{C}}(X; Y)$   
 $\text{Hom}_{\mathbf{C}}(X; Y) \otimes 1 \xrightarrow{\text{id}_{\text{Hom}_{\mathbf{C}}(X; Y)} \otimes j_Y} \text{Hom}_{\mathbf{C}}(X; Y) \otimes \text{Hom}_{\mathbf{C}}(Y; Y)$   
 $1 \otimes \text{Hom}_{\mathbf{C}}(X; Y) \xrightarrow{j_X \otimes \text{id}_{\text{Hom}_{\mathbf{C}}(X; Y)}} \text{Hom}_{\mathbf{C}}(X; Y) \otimes \text{Hom}_{\mathbf{C}}(Y; Y)$   
 $\text{Hom}_{\mathbf{C}}(X; Y) \otimes \text{Hom}_{\mathbf{C}}(Y; Y) \xleftarrow{m_{X, X, Y}} \text{Hom}_{\mathbf{C}}(X; X) \otimes \text{Hom}_{\mathbf{C}}(X; Y)$