1 Exponential

Definition 1.1. *Let $\mathcal{C}$ a category. For any $B, C \in \mathcal{C}$, (C^B, ev) forms an exponential where $C^B \in \mathcal{C}$ and $ev : C^B \times B \to C$, if for any object $A \in \mathcal{C}$ and $f : A \times B \to C$, there is a unique $u : A \to C^B$ such that $f = ev \circ (u \times 1_B)$. In other words, the follow diagram commutes.*

$$
\begin{array}{ccc}
A \times B & & \\
\Big\downarrow{\scriptstyle u \times 1_B} & \searrow{\scriptstyle f} & \\
& & C \\
C^B \times B & \nearrow{\scriptstyle ev} &
\end{array}
$$