Remark 2.4. The set of all maps $X \to Y$ is sometimes denoted by Y^X, so that Theorem **??** can be formulated as $\left|Y^X\right| = |Y|^{|X|}$. This is not the only reason for the notation Y^X. One can show that $Z^{X \cup Y} = Z^X \times Z^Y$ for disjoint X and Y, and $Z^{X \times Y} = (Z^X)^Y$.
Also, the Cartesian power

$$X^n = \underbrace{X \times \cdots \times X}_{n} = \{(x_1, \ldots, x_n) \mid x_i \in X \text{ for all } i\}$$

can be viewed as the set $X^{\{1,\ldots,n\}}$: a sequence $(x_1, \ldots, x_n)$ corresponds to a map $f\colon \{1, \ldots, n\} \to X$, $f(i) = x_i$.