Cardinality of function spaces

Let B^A denote the set of all functions from A to B, where A and B are **finite** sets. If $|A| = m$ and $|B| = n$, then $|B^A| = n^m$

Proof: By counting. For each element of A, there are n independent ways of mapping it to an element of B. We can view this as establishing how many numbers we can represent with m positions in base n: the answer to this is n^m. □