Introduction to Functions

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Function Formalities

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Definition

For a given $x \in A$, $f(x)$ is the ***image*** of x. This extends to any subset $S \subseteq A$: $f(S) = \{b \in B : \exists a \in S f(a) = b\}$.

Special Functions: Identities

Definition

The ***identity*** function for a set A, denoted id_A, is $f : A \to A$, $f(a) = a$.

Counting Functions

Consider sets A and B with $|A| = n$ and $|B| = m$. How many distinct functions are possible from A to B?

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- $g : P \to P$, $g(n) = \{m \in P : m \mid n\}$

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