Definition of Function.

1. Definition

name of function: f

A function f consists of:

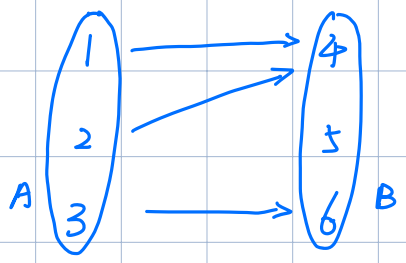
1) a domin: set of inputs (A) e.g. {1, 2, 3}

$x \in A$. $f(x) \in B$.

2) a codomin: set of 'potential' output (B) e.g. {4, 5, 6}

range: set of 'actual' outputs. e.g. {4, 6}.

3) a rule that matches each input ($x \in A$) to exactly one output ($f(x) \in B$)



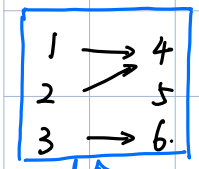
2. Notation

$f: A \to B$ means, f is the name of a function, A is the domin, B is the codomin.

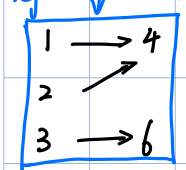
e.g. $f: \mathbb{R} \to \mathbb{R}$.

$f(x) = 3 + x^2 + \sin x$.

3. Convention



regard as same.



We may define a function with just the rule; the domin is the largest subset of $\mathbb{R}$ possible; The codomin is always $\mathbb{R}$.

e.g. $g(x) = \frac{1}{x^2}$

domin: $g = (-\infty, 0) \cup (0, \infty)$; codomin: $g = \mathbb{R}$.

4. Math & CS.

Math		CS.
domain	→	domain.
codomain	→	range.
range.	→	image