

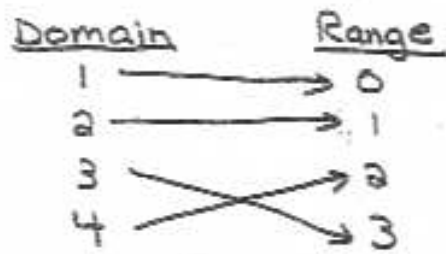
Functions

main topics: Identifying functions
(various methods)
function evaluation
basic domain & range

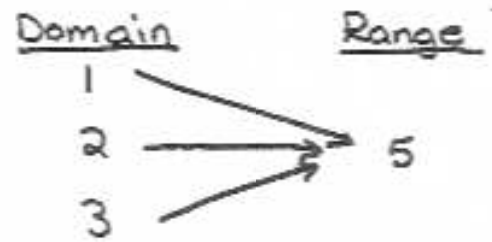
Identifying functions

main restriction: one x-value cannot generate 2 y-values

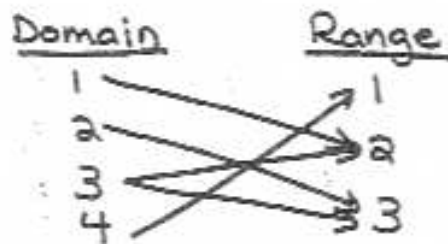
Examples



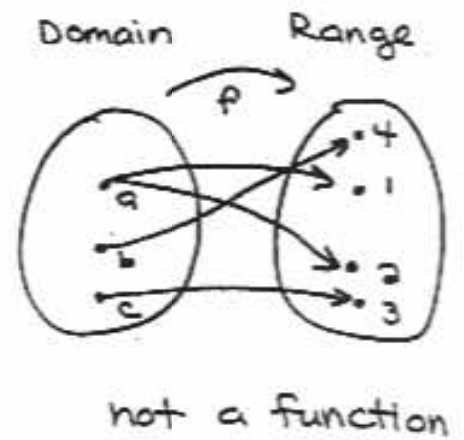
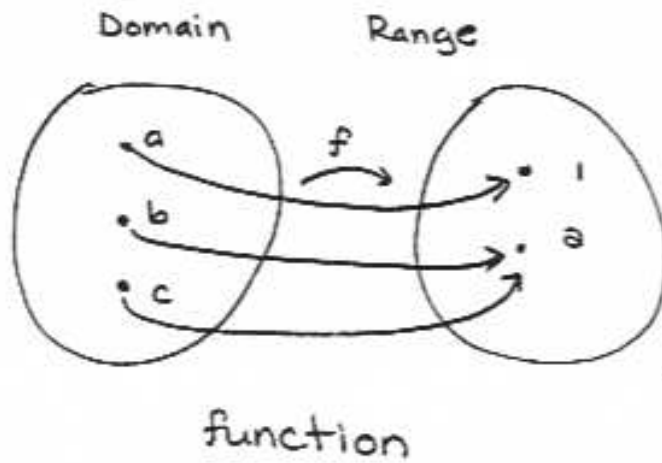
function



function



not a function
(3 goes to 2 & 3)



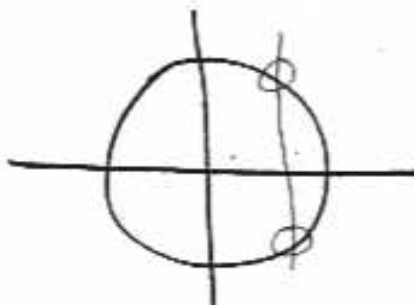
$$A = \{ (1, 3), (2, 4), (5, 6), (-1, 4) \}$$

function

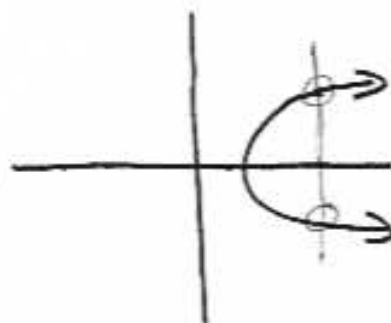
$$B = \{ (1, 6), (1, 5), (2, 4) \}$$

not a function

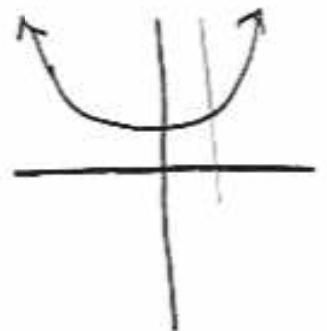
vertical line test



not a function



not a function



function

- If any vertical line crosses the graph of a relation more than once, then it is not a function.

Evaluating Functions

Ex

Let $f(x) = x + 7$

Find a) $f(3)$

$$f(3) = 3 + 7 = \boxed{10}$$

b) $f(z)$

$$f(z) = \boxed{z + 7}$$

c) $f(x+2)$

$$f(x+2) = (x+2) + 7 \\ = \boxed{x+9}$$

Ex

Let $f(x) = \begin{cases} x^2 + 1 & \text{if } x \leq 3 \\ -2x & \text{if } x > 3 \end{cases}$

a) $f(2)$ $f(2) = 2^2 + 1 = \boxed{5}$

use
eq. 1

b) $f(6)$

$$f(6) = -2(6) = \boxed{-12}$$

use equ. 2

c) $f(3)$

$$f(3) = 3^2 + 1 = \boxed{10}$$

use equ. 1

Domains & Ranges

- Done in 2.5 notes