

Chapter Review

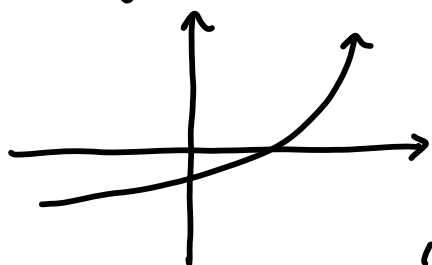


Introduction to Functions and Relations

- Relations are a collection of ordered pairs, (x, y) points.
- Functions are a special type of relation, one that pairs one x value with only one y value

Functions and relations have various forms to include

graphs



Sets

$$\{(1, 4), (2, 5), (3, 9)\}$$

Tables

x	y
-1	0
4	7
3	10
2	-1

"f of x"

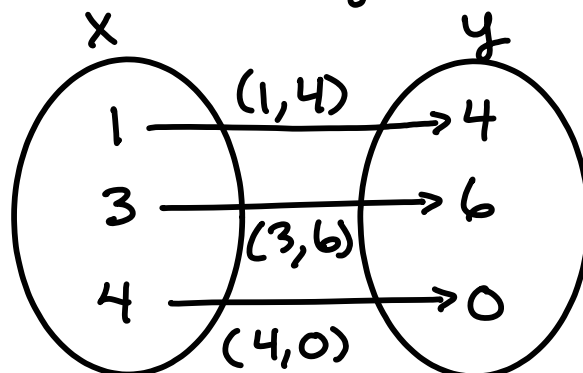
Equations $(y = f(x))$

$$y = 2x + 1$$

or $f(x) = 2x + 1$

↑
Function
Notation

Mapping



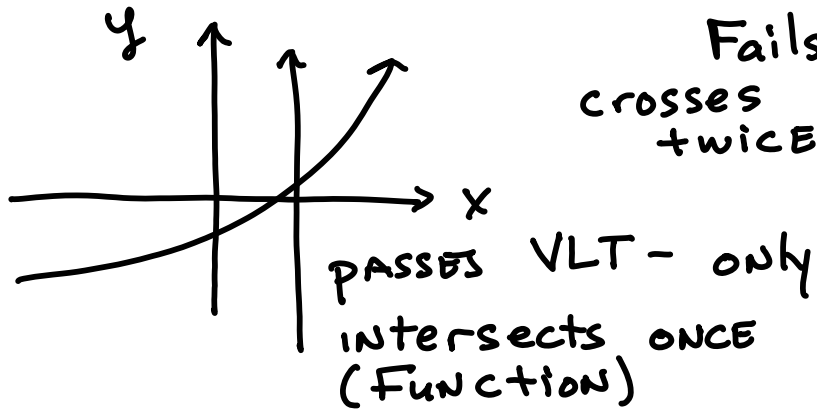
Note:

We call the x -numbers the DOMAIN and y -numbers the RANGE

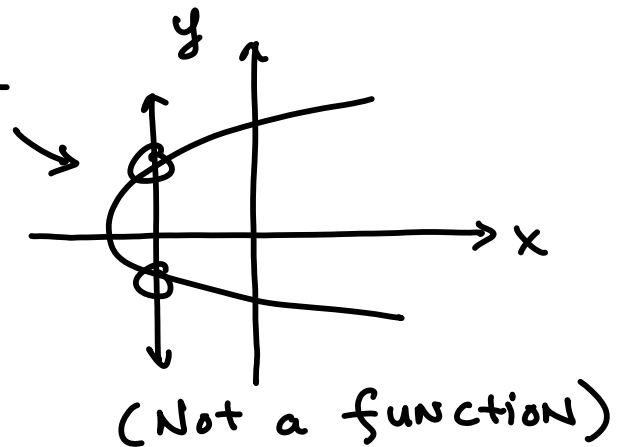
Test a relation to determine if it is a function -

- CAN use the VLT - Vertical Line Test
- Or use a mapping diagram

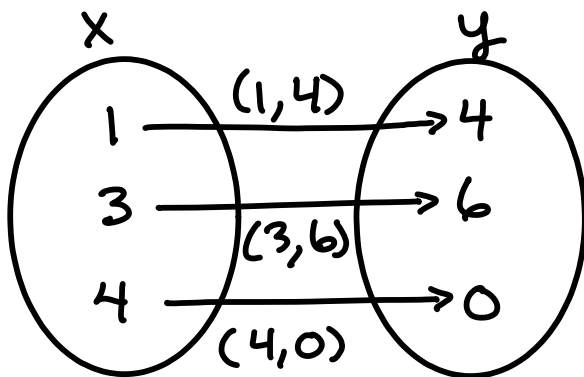
Example using VLT



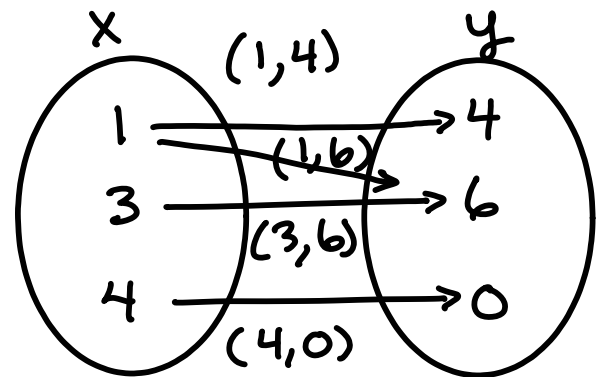
Fails -
crosses
twice



Example using mapping



passes each x
goes to only one
y (Function)



Fails 1 is paired
with 4 and 6;
(Not a function)



Function Operations

Given functions you CAN $+$, $-$, \times , \div them

Examples,

$$f(x) = 3x \quad g(x) = x + 2$$

$$f(x) + g(x) = 3x + x + 2 = 4x + 2$$

$$f(x) - g(x) = 3x - (x + 2) = 2x - 2$$

$$f(x) \cdot g(x) = 3x(x + 2) = 3x^2 + 6x$$

$$\frac{f(x)}{g(x)} = \frac{3x}{x + 2}$$

Evaluating a function - plug in value and simplify

Example, $f(x) = 2x^2$
say "f of 3" $\longrightarrow f(3) = 2(3)^2 = 2 \cdot 9 = 18$



Inverse Functions

