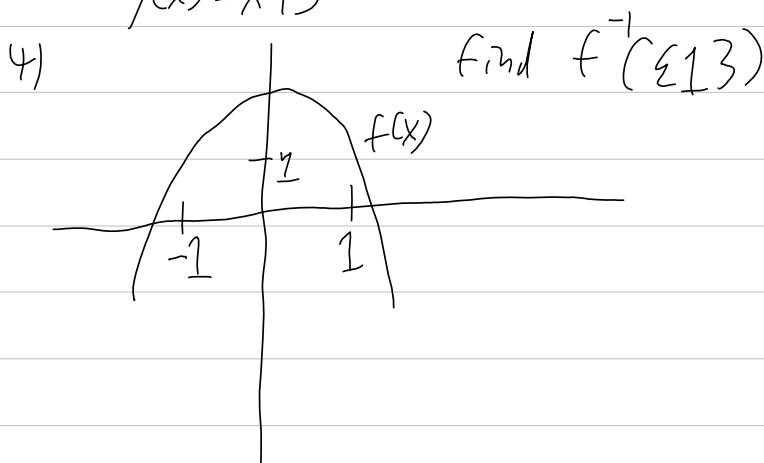


Ann: - Wik: 2 today (30 min) w3M1
 - Wik: 3 Friday

- Preview:
- 1) Is $x^2 + y = 4$ a func of x ? y ?
 - 2) find $f(x^2 - 4)$ if $f(y) = y^2 + 2$
 - 3) Evaluate $(f/g)(-3)$ where
 $f(x) = x^2 + 2$
 $g(x) = x + 3$



- 5) is $\{(1, 2), (3, 2), (1, 3)\}$ a function?

(Content: M3.d1)

M3.d2

Defn: - A relation

R is a set of ordered

pairs: $\{(x, y) \mid x \in X, y \in Y\}$

- A function is a relation such that
 for each $x \in X$, there is one and only
 one y such that $(x, y) \in R$.

non-ex) $\{(1, 2), (1, 4), (5, 4)\}$

$1 \mapsto 2$
 $1 \mapsto 4$ Bad

non-ex) let R be points on



Note $(1, \text{some pos})$

and $(1, \text{some neg})$

are in R , so not a func.

Notation:

name domain codomain

$f: A \rightarrow B$

$a \mapsto f(a)$

rule

ex) $f: \mathbb{Z} \rightarrow \mathbb{Q}$ } common on white board
 $z \mapsto z/2$

also notation: ex) let $g: \mathbb{R} \rightarrow \mathbb{R}$ where $g(r) = r^2 + 2$ - common in writing

def: The image (or range) of $f: A \rightarrow B$
 is $\{f(a) \mid a \in A\}$, i.e. the values f
 may achieve in B .

Goto M3.d1