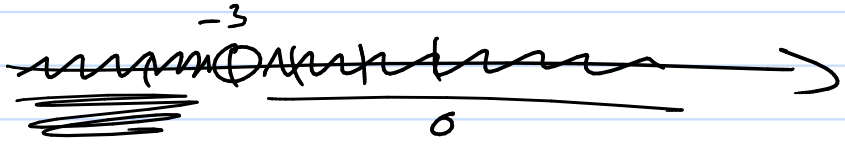
Math 112

Q's $S = \{x : x \neq -3\}$

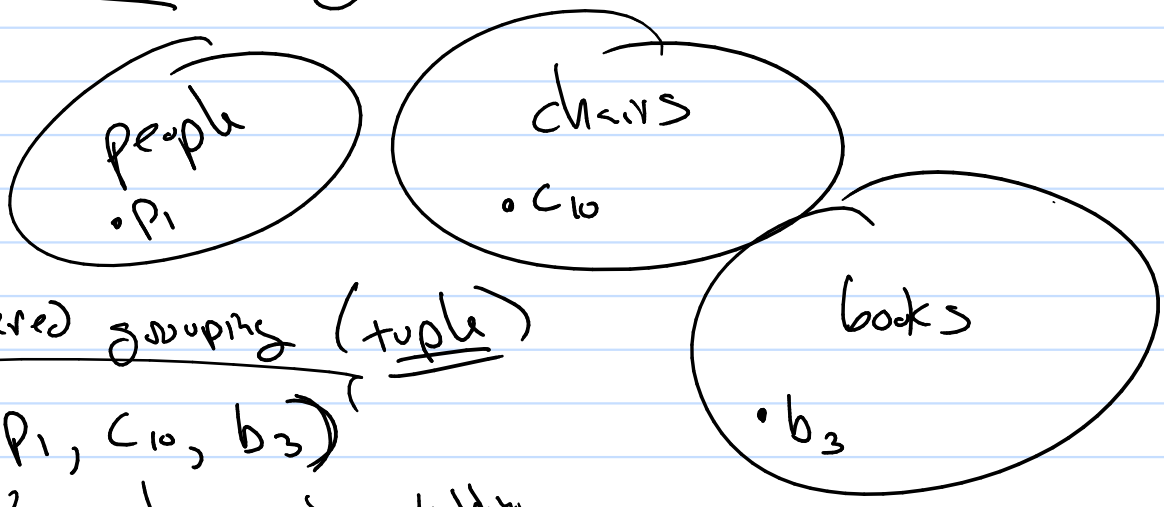


$(-\infty, -3) \cup (-3, \infty)$

Relation → Functions

Important!!

Relationships given many sets



ordered grouping (tuple)

(p_1, c_{10}, b_3)

p_1: person 1; c_{10}: sits in chair 10; b_3: holding book 3

(ex) (Mark, lounger, Precalc Book)

3-tuple

(ex) (Happy, ice cream, chocolate, sprinkles)

4-tuple.

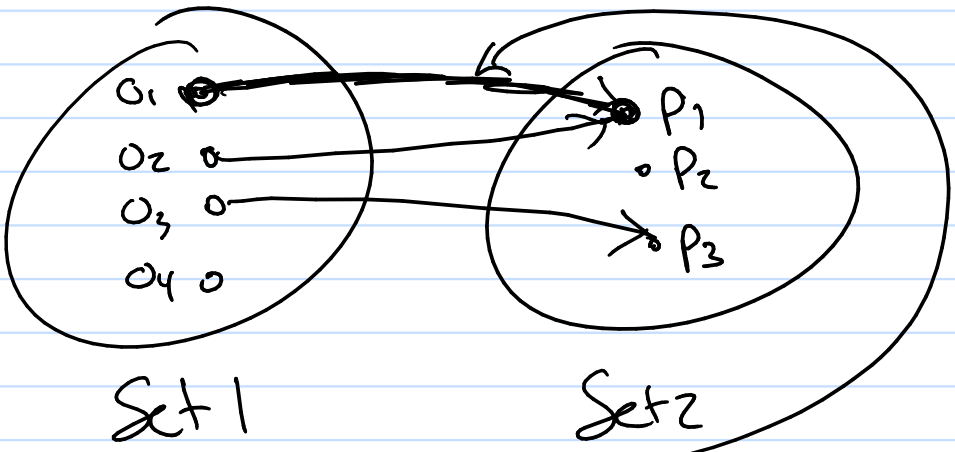
Relationship ~ (why are the tuples formed)

Simplify the problem

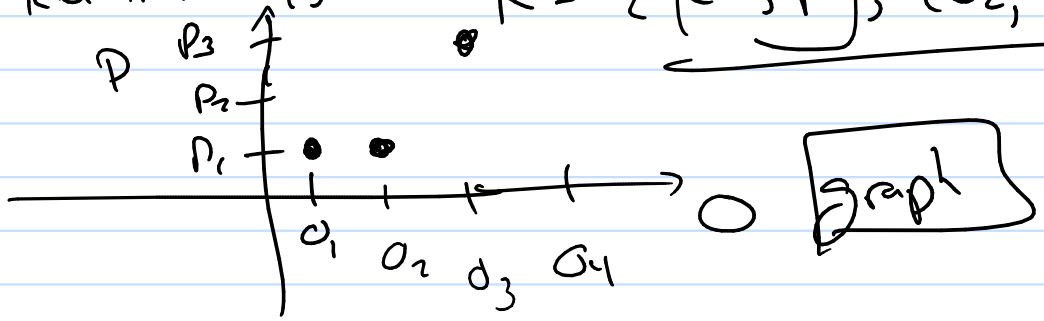
① use only two sets.

we have ordered pairs (o_1, o_2)

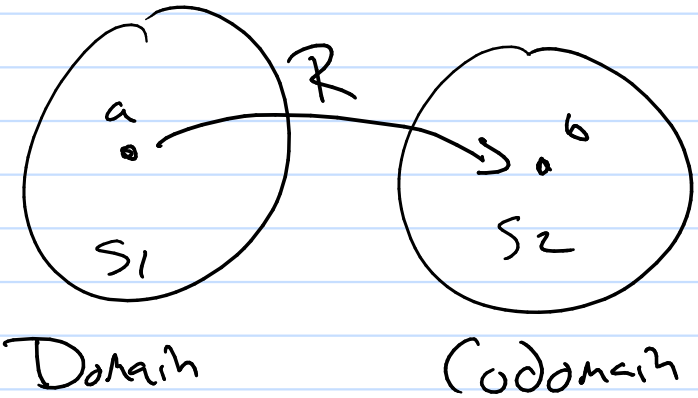
Visualize?



Relation $R = \{(o_1, p_1), (o_2, p_1), (o_3, p_3)\}$



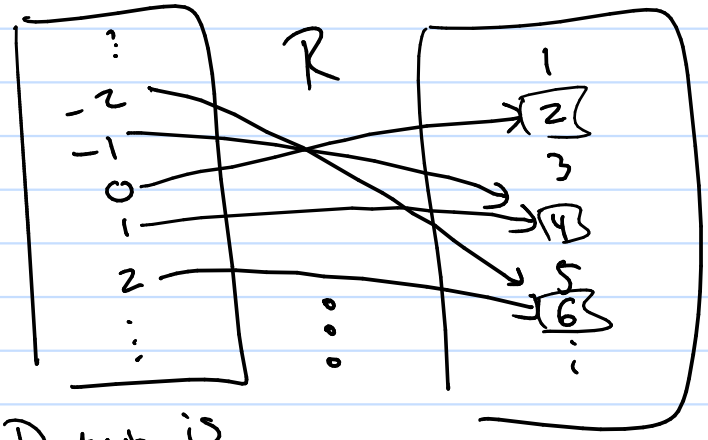
For



Domain Codomain

(a,b) is in the relation R

Ex



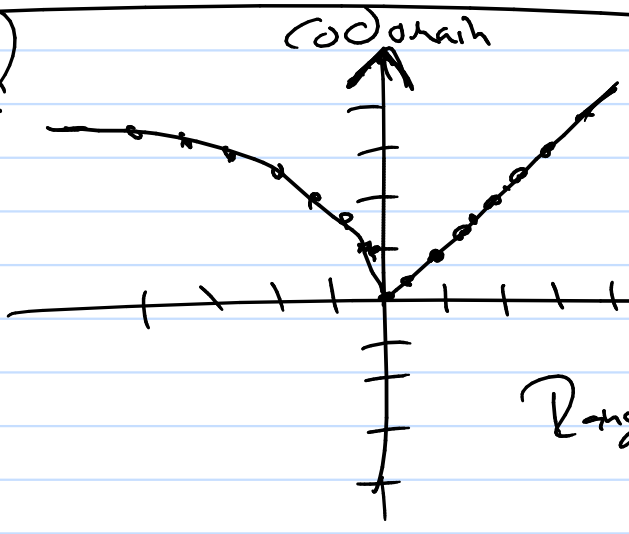
Domain is Integers

Codomain is natural numbers (Pos Integers)

Range: elements that the Domain goes to.

Range = $\{2, 4, 6, 8, \ldots\}$

Ex Graph



Domain = all reals

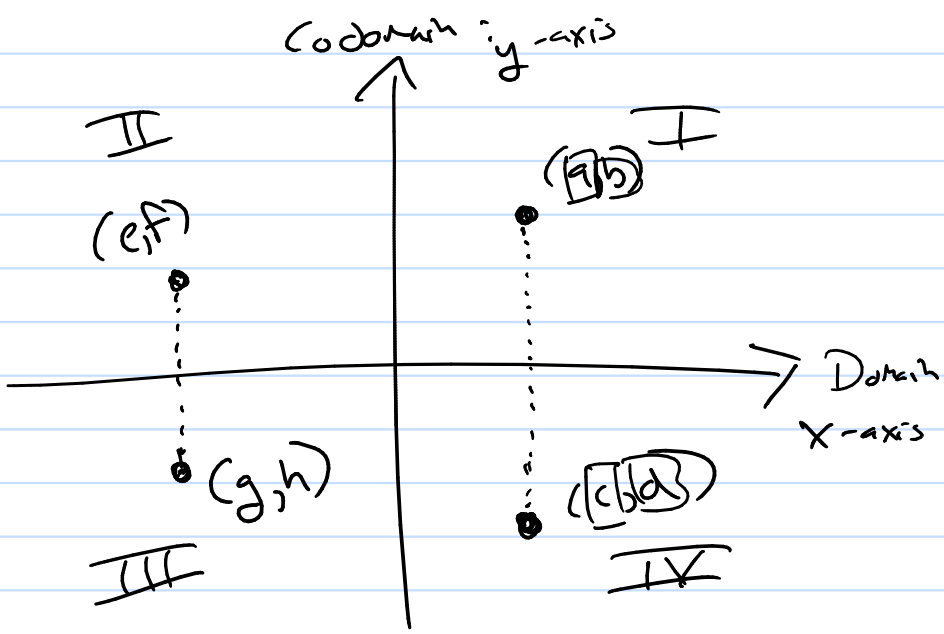
Range: $\{y : y \geq 0\}$

$[0, \infty)$ or

Note geogebra.org

Properties & graphs

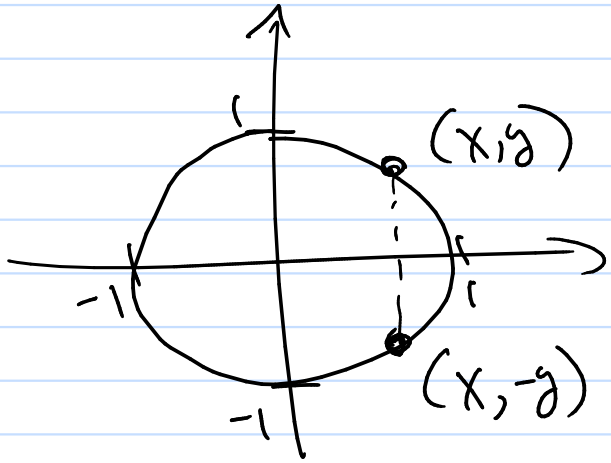
① Symmetry



a) Domain Axis

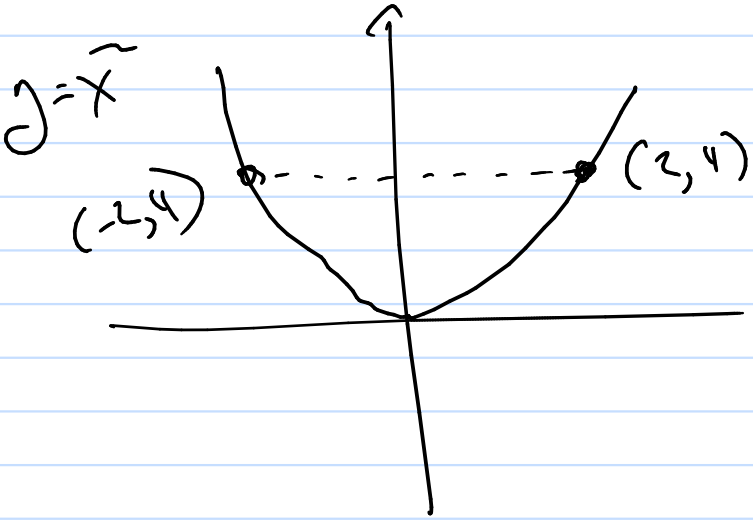
ex) X-axis

ex) $x^2 + y^2 = 1$



b) Sym about codomain axis

y-axis



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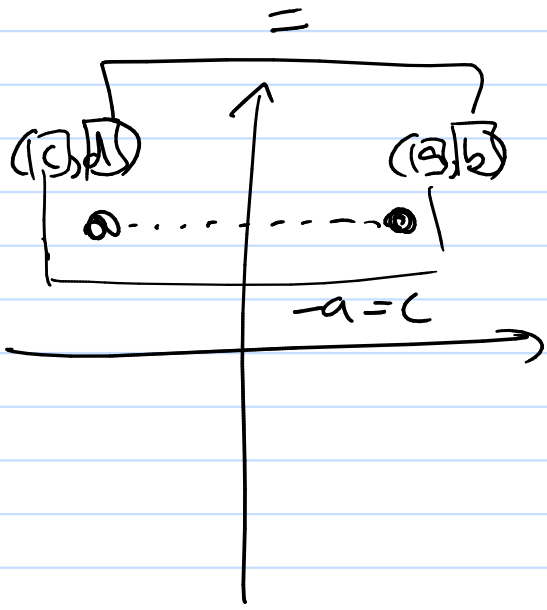
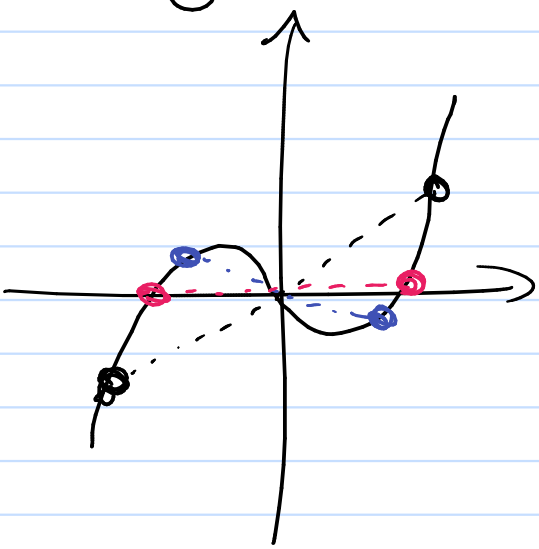
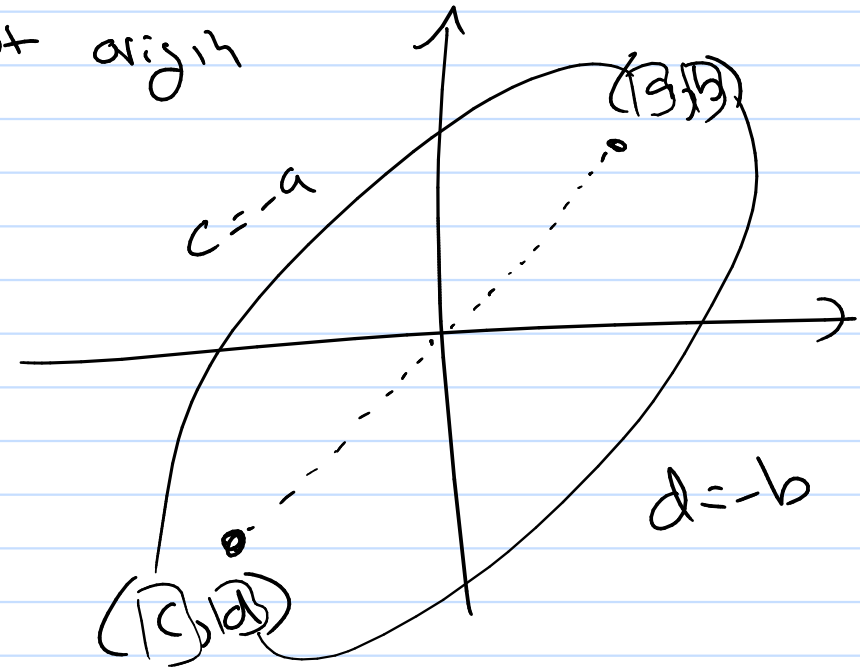


c) symmetric about origin

(ex) $y = x^3 - x$





Special Relation → Function

Function? ① It is a relation

② For every point in the domain it will only map to one point