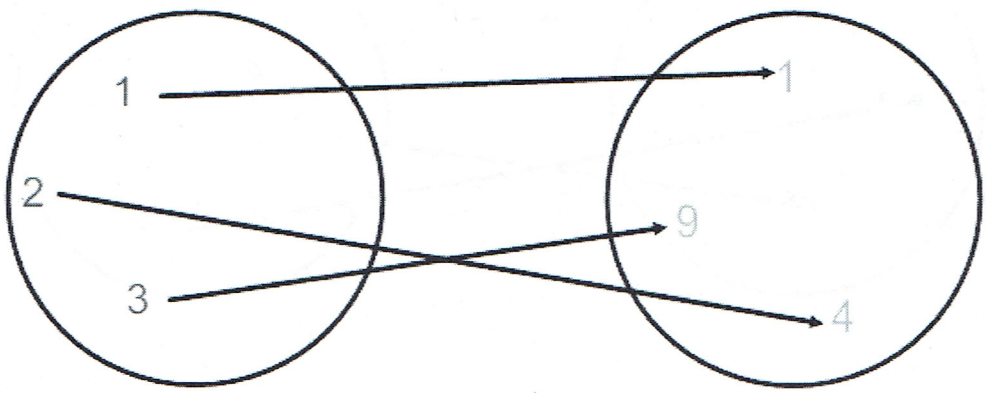
1.4 Inverse of a Relation

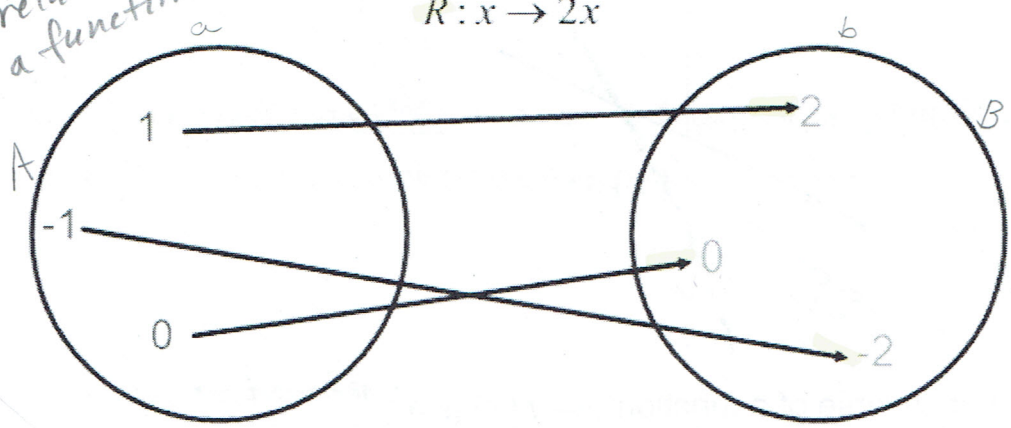
A relation is a mapping from one set onto another set.



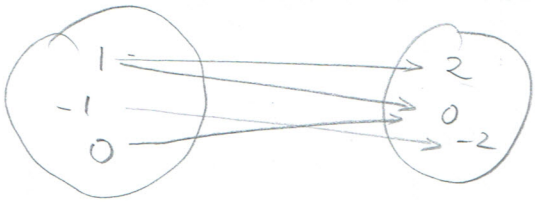
Let A and B be sets. The inverse of a relations $R: a \to b$ where $a \in A$ and $b \in B$ is a relation $R^{-1}: b \to a$ where $b \in B$ and $\in A$.

This relation is a function

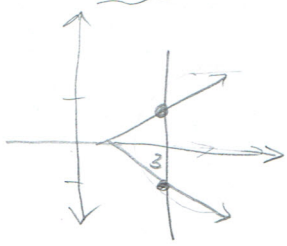
$R: x \to 2x$



This is not a function



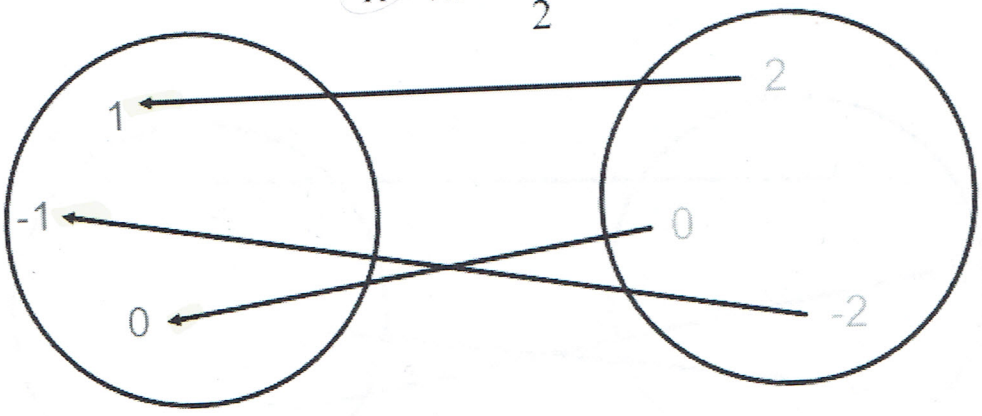
vertical Line Test



NOT a function because same x has 2 y-values

* Defn A relation is a function if each x-value has only one corresponding y-value

$R^{-1}: x \to \frac{1}{2}x$



y-intercept

$y = mx + b$

$y = 2x + -3$

slope

Example 1

Graph the relation $y = 2x - 3$ and then graph the inverse of this relation.

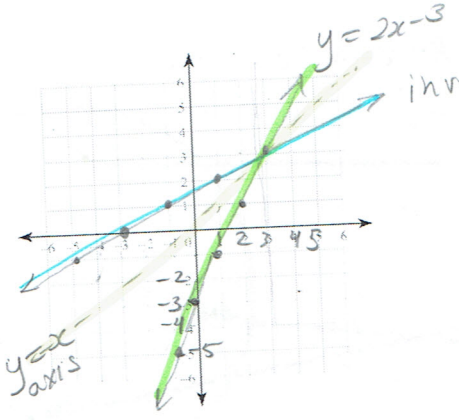
What do you notice?

$y = 2x + 3$

x	y
-1	-5
0	-3
1	-1
2	1
3	3

inverserse

x	y
-5	-1
-3	0
-1	1
1	2
3	3



Reflection

The graph of an inverse of a function $y = f(x)$ is a REFLECTION in the $y = x$ axis. In mapping notation this is: $(x, y) \to (y, x)$.