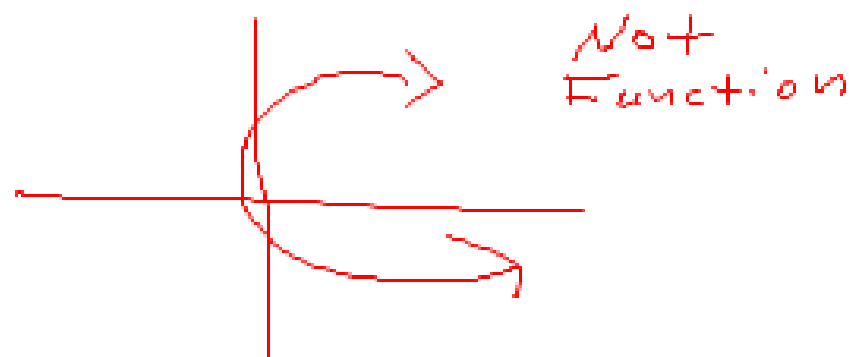


Unit 6:
Lesson 01

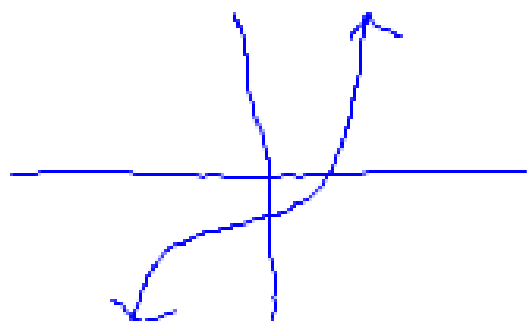
Basic definitions

Function definition: A relation (set of points) in which each x-value is assigned to only one y-value... it passes the vertical line test.



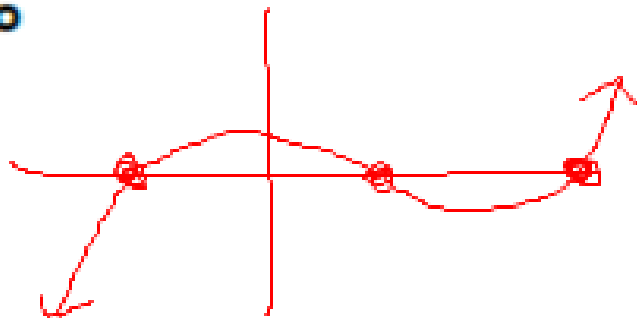
One-to-one relation: A relation (set of points) in which each y-value is assigned to only one x-value. It passes the horizontal line test.

1-1

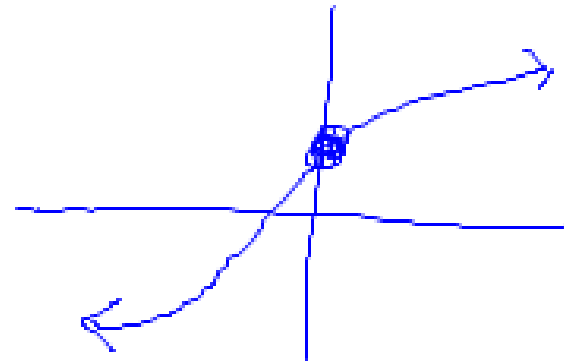


X-intercept: Point on the graph where the relation touches the x-axis ($y = 0$).

Goes by two other names: **root** and **zero**



Y-intercept: Point on the graph where the relation touches the y-axis ($x = 0$).



Interval notation: Intervals can be shown using inequalities or with parenthesis (**not equal**) and square brackets (**equal**):

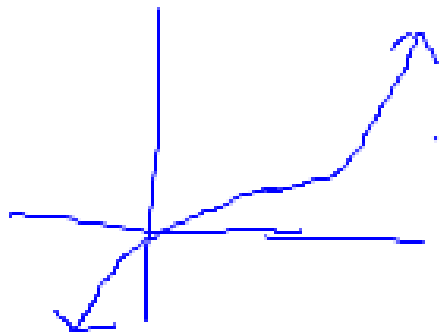
Example 1: $-\infty < x \leq 5$

$(-\infty, 5]$

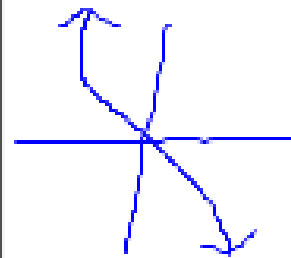
Example 2: $7 \leq x < 19$

$[7, 19)$

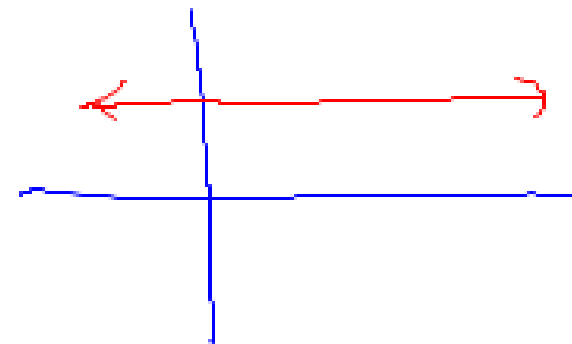
Increasing : A relation increases on an interval if as x increases, y increases.



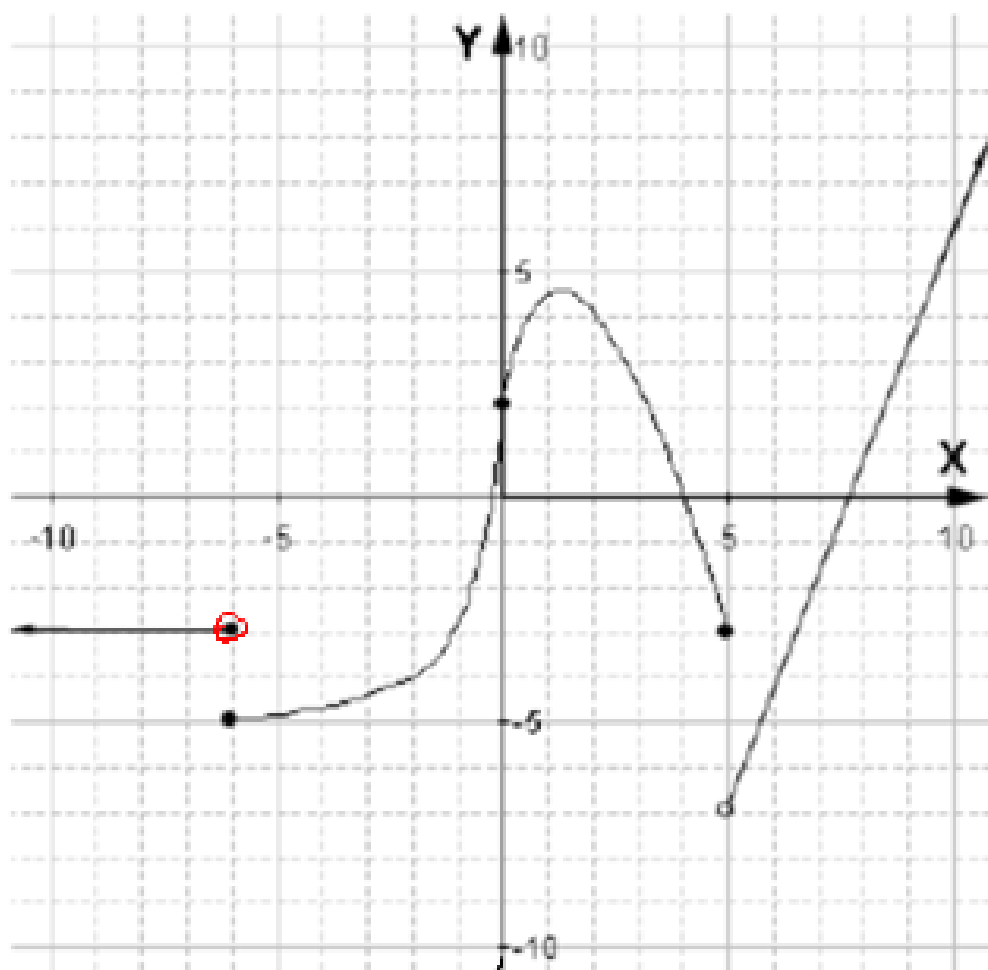
Decreasing : A relation decreases on an interval if as x increases, y decreases.



Constant: A relation is constant over an interval if it remains at the same value.



Example 3:



Domain: x values used $(-\infty, \infty)$
Reals

Range: y values used $(-7, \infty)$

- Is this a function? Yes
- Y-intercept? $(0, 2)$
- Zeros? $(-3, 0)$ $(4, 0)$
- $f(5) = -3$
- One-to-one? No
- $f(0) = 2$
- Increasing interval(s)? $[-6, 1.5]$
 $(5, \infty)$
- Decreasing interval(s)? $[1.5, 5]$
- Constant interval(s)? $(-\infty, -6)$
 $(7, 8)$
- Intervals where $f(x) \geq 0$
 $[-3, 4]$
 $[7, 8]$

Homework: Complete problems
1-14 on worksheet