

### Lesson #3

Aim: How do we graph a piece-wise function?

Do Now: Don't use the calculator

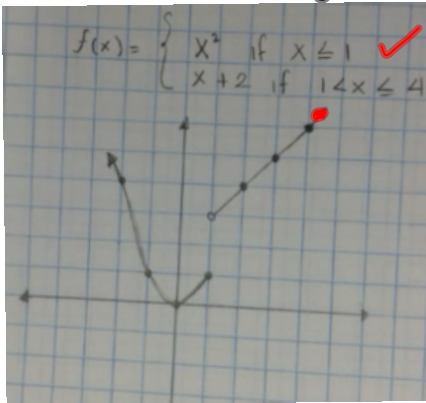
graph

$$f(x) = \begin{cases} x^2 & \text{if } x \leq 1 \\ x+2 & \text{if } 1 < x \leq 4 \end{cases}$$

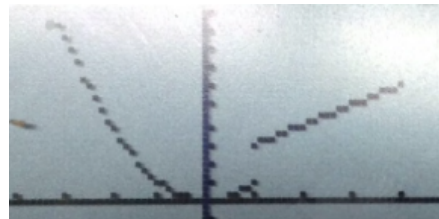
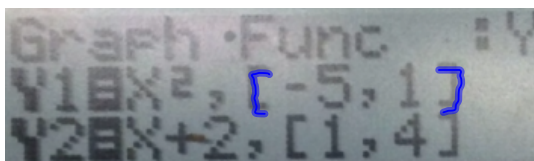
TABLES

|    |   |   |        |
|----|---|---|--------|
| 1  | → | 1 | (1,1)  |
| 0  | → | 0 | (0,0)  |
| -1 | → | 1 | (-1,1) |
| -2 | → | 4 | (-2,4) |
| -3 | → | 9 | (-3,9) |

table



### I- Piece-wise function



Note: What ARE the Advantages?

Disadvantages of using a calculator?

Q: What are the advantages?  
 A: we don't need calculate to make a table  
 Q: Disadvantages of using a calculator?  
 A: In this calculator we can't show x is greater than 1, not greater and equal than 1.

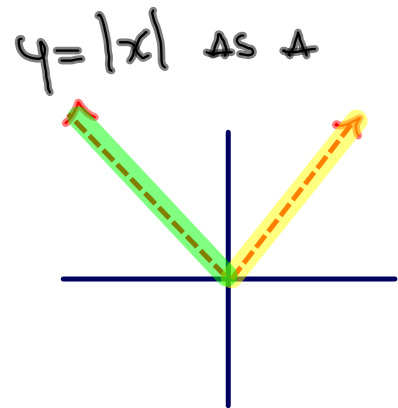
## II - the Absolute Value as a piecewise function

①  $y = |x|$

② In the calculator  $\text{ABS}(x)$

③ without the calculator graph piece-wise function.

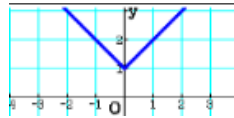
④  $|x| = y = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$



### III - Exercises

(NO CALCULATOR) graph AS PIECE-WISE function

1)  $y = |x| + 1$



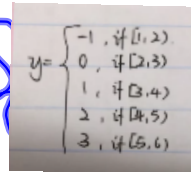
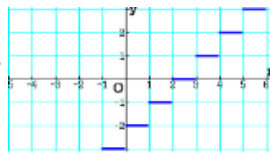
$y = \begin{cases} -x+1 & \text{if } x < 0 \\ x+1 & \text{if } x \geq 0 \end{cases}$

calculator

$y_1 = -x+1$   $[1, 0]$

$y_2 = x+1$   $[0, 10]$

2)  $y = [x] - 2$

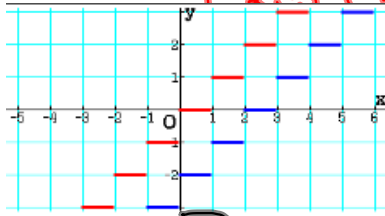


note: greatest integer function  $[ ]$  - Round down.

ex  $[1.99] = 1$

$[-2.5] = -3$

$[2.5] = 2$



Reference

$y = [x]$   
parent function

$y = [x] - 2$