TAVUA COLLEGE
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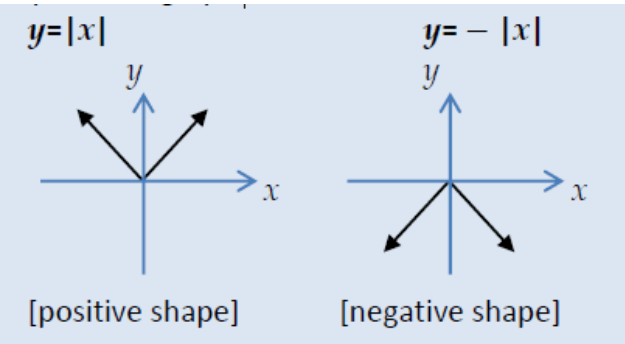
WEEKLY HOME STUDY PACKAGE - WEEK 1 (05/07/21 – 09/07/21)

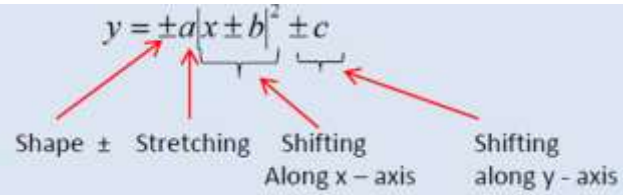
Subject	**MATHS**	**Year/Level**	**12**
Strand	3 – Graphs		
Sub-strand	3.1 – Graphs and intersections		
Content Learning Outcome	Study and Interpret graphs		

LESSON NOTE: ABSOLUTE VALUE GRAPH

- Absolute values don't change positive numbers; they just change the **negative** number and make it **positive**, therefore the negative numbers on the left side will also give positive y's.
- The shape of the graph is:



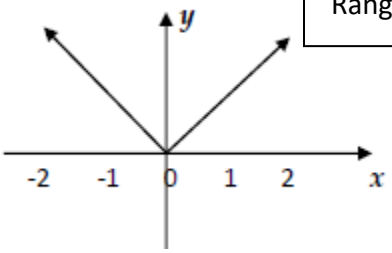
The transformation of an absolute value graph will have the form:



- $y = |x| + d$ *shifts the fuction* ***up*** d *units*
- $y = |x| - d$ *shift the function* ***down*** d *units*
- $y = |x - c|$ *shifts the function* ***right*** c *units*
- $y = |x + c|$ *shifts the function* ***left*** c *units*

$E.g\ of\ combination\ transformation: y = |x + c| - d, shifts\ the\ function$ ***left*** $c\ units\ and$ ***down*** $d\ units$

Example 1 : Draw the graph of $y = |x|$ and State the range

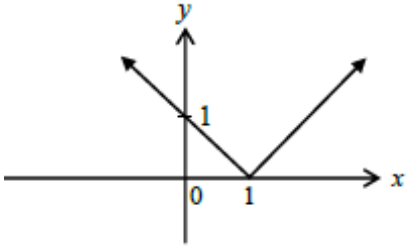


Range = $\{y: y \geq 0, y \in R\}$

We can use the x values {-2, -1, 0, 1, 2} to find the corresponding y-values

x	-2	-1	0	1	2
$y = \|x\|$	$\|-2\| = 2$	$\|-1\| = 1$	$\|0\| = 0$	$\|1\| = 1$	$\|2\| = 2$

EXAMPLE 2: The graph of the function f(x) is shown below. Write the equation of f(x) and state the range.



The graph has shifted 1 unit **right** only $\therefore f(x) = |x - 1|$

Range: $\{y: y \geq 0, y \in R\}$

Class Activity:

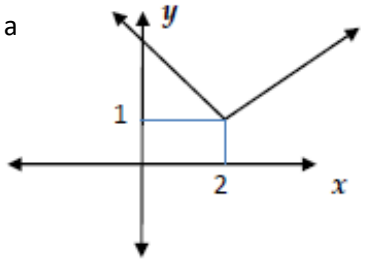
1. Sketch the following graphs

a) $y = -|x| + 2$ (2 marks)

b) $y = |x + 2| - 1$ (2 mark)

2. The graph of the function f(x) is shown below. Write the equation of f(x) and state the range.

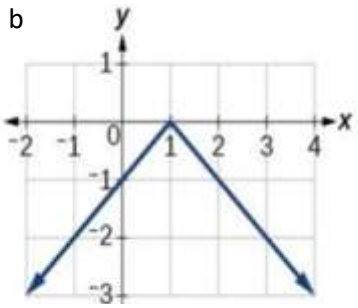
a



Equation: _____ (1 mark)

Range: _____ (1 mark)

b



Equation: _____ (1 mark)

Range: _____ (1 mark)